

Workshop manual
Rider 11, Rider 13,
Rider 11 Bio, Rider 13 Bio,
Rider 16



English

Workshop manual

Rider 11, Rider 13 Rider 11 Bio, Rider 13 Bio Rider 16

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Safety regulations

General instructions

The workshop handbook is written for personnel who are assumed to have general ride-on mower repair and service know-how.

The workshop where the ride-on mower is repaired should be equipped with safety devices in accordance with local regulations.

No-one should attempt to repair the ride-on mower without having first read and understood the contents of this handbook.

The machine is tested and approved only with the equipment originally provided or recommended by the manufacturer.

The below-mentioned boxes are included in this workshop handbook, as is appropriate.



WARNING!

The warning box indicates a risk of injury to persons if the instructions are not followed.

IMPORTANT INFORMATION

This box indicates a risk of damage to the material if the instructions are not followed.

Special instructions

The fuel used in the ride-on mower has the following hazardous characteristics:

- Toxic fluid and fumes
- Can cause eye and skin complaints
- Can cause breathing difficulties
- Highly flammable

When using compressed air, do not direct the compressed air stream towards your, or anybody else's, body. Air can be forced into the blood stream, thereby constituting a danger to life .

Use eye protection when working with tensioned springs.

Use hearing protectors when test driving.

After test driving, do not touch the silencer before it has cooled down. Risk of burn injuries. This especially applies if the ride-on mower is equipped with a catalytic converter. If consumed, the lining on and in the catalytic converter element is dangerous to health. Use protective gloves when working with the catalytic converter/silencer.

The blades are sharp and can cause cutting injuries. Always use protective gloves when you are handling the blades.

Use protective glasses when working with the mowing deck. If the belt's tension spring comes off and flies upwards, this can cause injury to persons.

Use eye protection when working with the battery with the plugs removed. Be extra careful when handling battery acid. Spilling acid on the skin can cause severe burn injuries. If acid is spilt on the skin, rinse immediately with water. If acid gets into the eyes, this can cause blindness, contact a doctor.

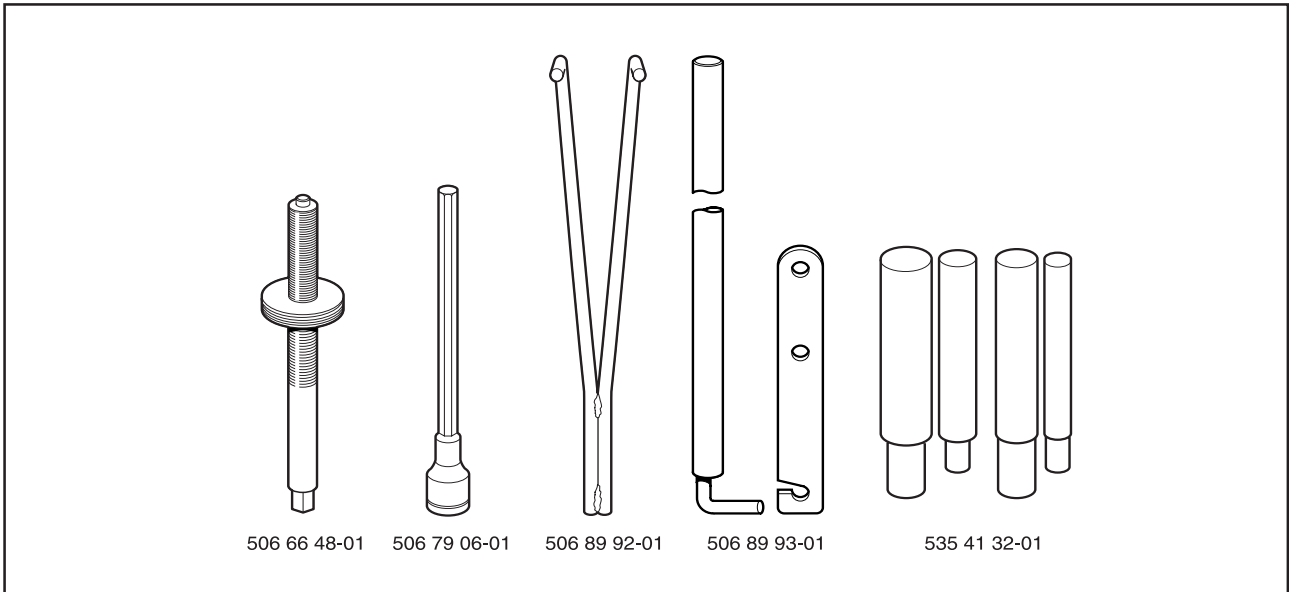
Be careful with the maintenance of the battery. Explosive gas is formed in the battery. Never handle the battery when smoking or in the vicinity of naked flames or sparks. Otherwise, the battery can explode and cause severe injuries.

IMPORTANT INFORMATION

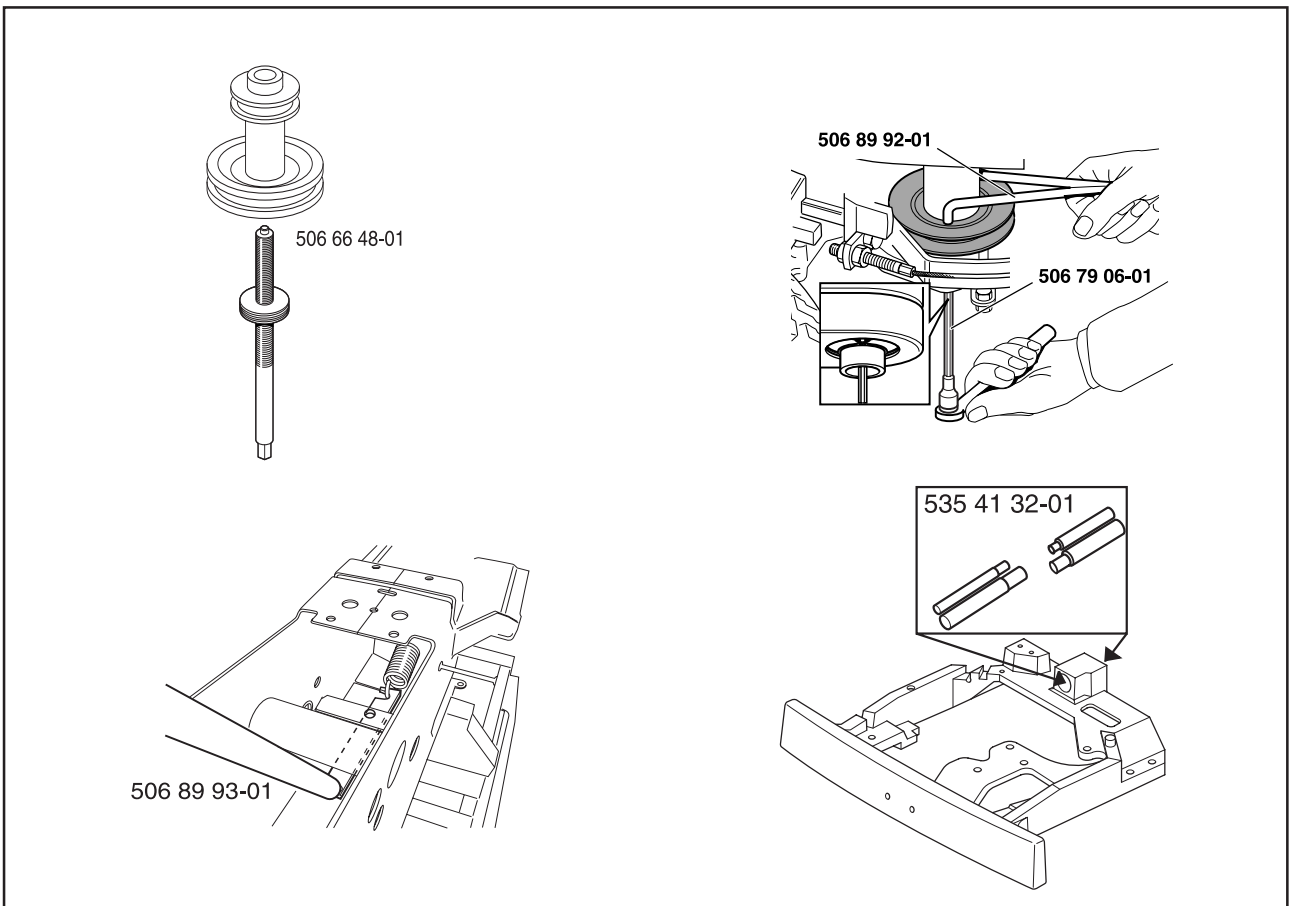
Waste oil and old filters shall be handled as hazardous waste.

Special tools

The following special tools are used when working on the ride-on mower.
Special tools for the engine and transmission are specified in resp. Workshop Manuals.



- 506 66 48-01 Puller for engine pulley.
- 506 79 06-01 Ball-ended Allen key 3/8" to unscrew the engine pulley socket head cap screw (Briggs & Stratton).
- 506 89 92-01 Counter-hold for engine belt pulley.
- 506 89 93-01 Tool for the articulation spring.
- 535 41 32-01 Set of drifts for bushings on the swing axle.



Technical data

Dimensions:

	Rider 11	Rider 13
Length	2 090 mm/6,85 ft	2 000 mm/6,56 ft
Width	880 mm/2,89 ft	900 mm/2,95 ft
Height (over steering wheel)	1 070 mm/3,52 ft	1 060 mm/3,48 ft
Weight	197 kg/433 lb	190 kg/419 lb
Track front	720 mm/2,36 ft	625 mm/2,05 ft
Track rear	620 mm/2,04 ft	625 mm/2,05 ft
Wheel base	860 mm/2,81 ft	860 mm/2,81 ft
Tyre size	16 x 6.50 x 8	16 x 6.50 x 8
Air pressure	60 kPa/8,5 PSI	60 kPa/8,5 PSI
Max. gradient	15°	15°

Engine:

	Rider 11	Rider 13
Manufacture	Briggs & Stratton	Briggs & Stratton
Model	28N707	286707
Power	7,7/10,5 kW/hp	9,2/12,5 kW/hp
Displacement	362 cm ³	465 cm ³
Fuel	min. 85 octane unleaded	min. 85 octane unleaded
Tank capacity	7 litres/7,4 USqt	7 litres/7,4 USqt
Oil	SAE 30 or SAE 10W/30 class SF-CC	SAE 30 or SAE 10W/30 class SF-CC
Oil capacity	1,4 litres/1,5 USqt	1,4 litres/1,5 USqt

Gearbox:

	Rider 11	Rider 13
Manufacture	Peerless MST 205	Tuff Torq K46
Oil		SAE 10W/30 class SF-CC
Oil capacity		2,2 litres/2,35 USqt
Gears, forwards	5	
Gears, reverse	1	

Electrical system

	Rider 11	Rider 13
Type	12 V, negative earth	12 V, negative earth
Battery	12 V, 24 Ah	12 V, 24 Ah
Main fuse	Flat pin yoke 15 A	Flat pin yoke 15 A
Spark plug	Champion CJ8 or J8	Champion CJ8 or J8
Spark plug gap	0,75 mm/0,030"	0,75 mm/0,030"

Tightening moments

Carrier steering	5–10 Nm	3,5-7 lbft
Pulley steering wire	20–30 Nm	14-21 lbft
Belt wheel	35–40 Nm	25-28 lbft
Blades	45–50 Nm	32-36 lbft
Blade bearings	20–25 Nm	14-18 lbft
Belt tensioner wheel	15–25 Nm	10-18 lbft
Holder screws, engine	20–25 Nm	14-18 lbft
Holder screws, gear box	20–25 Nm	14-18 lbft
Engine pulley	70–80 Nm	50-56 lbft

Play

Clutch wire R 11:	8–10 mm (5/16" - 3/8")
Brake control lever against stop bolt R 11:	0–1 mm (0 - 0.040")
Brake control lever R 11:	7–9 mm (1/4" - 3/8")
Brake wires R13, R16:	1 mm (0.040")
Wires, hydrostatic transmission pedals R13, R16:	0 mm

Dimensions:	Rider 16
Length	2 000 mm/6,56 ft
Width	900 mm/2,95 ft
Height (over steering wheel)	1 060 mm/3,48 ft
Weight	208 kg/459 lb
Track front	625 mm/2,05 ft
Track rear	625 mm/2,05 ft
Wheel base	860 mm/2,81 ft
Tyre size	16 x 6.50 x 8
Air pressure	60 kPa/8,5 PSI
Max. gradient	15°
Engine:	Rider 16
Manufacture	Briggs & Stratton
Model - 2002	28N707
Model 2003 -	282H070110E1
Power	11,4/15,5 kW/hp
Displacement	465 cm ³ /28,42 cu inch
Fuel	min 85 octane unleaded
Tank capacity	7 litres/7,4 USqt
Oil mineral-2002	SAE 30 or 10W/30 class CD-CF
Oil synthetic 2003 -	SAE 5W/30 or 10W/30 class SJ-CF
Oil mineral 2003 -	or SAE 30 class SF-CC
Oil capacity	1,4 litres/1,5 USqt
Gearbox:	Rider 16
Manufacture	Tuff Torq K 46
Oil	SAE 10W/30 class SF-CC
Oil capacity	2,2 litres/2,35 USqt
Electrical system	Rider 16
Type	12 V, negative earth
Battery	12 V, 24 Ah
Main fuse	Flat pin yoke 15 A
Spark plug - 2002	Champion CJ8 or J8
Spark plug 2003 -	Champion QC12YC
Spark plug gap	0,75 mm/0,030"

Mowing deck:	Rear ejector 85	Rear ejector 97	Side ejector 97	Bio 90	Bio 103
Cutting width	850 mm	970 mm	970 mm	900 mm	1 030 mm
Cutting height	40-90 mm	40-90 mm	40-80 mm	45-95 mm	45-95 mm
Blade length	304 mm	350 mm	350 mm	480 mm	410 mm
Noise level	100 dB(A)	100 dB(A)	100 dB(A)	100 dB(A)	100 dB(A)
Weight	29,0 kg	48,0 kg	45,0 kg	39,0 kg	47,0 kg
Overall width	950 mm	1 075 mm	1 300 mm	1 000 mm	1 115 mm

Mowing deck:	BioClip 112	Combi 103	Combi 112
Cutting width	1 200 mm	1 030 mm	1 220 mm
Cutting height	40-90 mm	45-95 mm	40-90 mm
Blade length	420 mm	410 mm	420 mm
Noise level	100 dB(A)	100 dB(A)	100 dB(A)
Weight	50,0 kg	47,0 kg	52,0 kg
Overall width	1 230 mm	1 115 mm	1 230 mm

Control points

Mowing deck parallelism with cutting height in pos. 1:	± 2 mm	$\pm 0,079$ "
Cutting height control in pos. 1:	Rider 11 = 37 ± 2 mm	$1,46" \pm 0,079$ "
	Bio = 45 ± 2 mm	$1,77" \pm 0,079$ "
	Other = 40 ± 2 mm	$1,57" \pm 0,079$ "
Synchronous transmission belt tension Bio 103 version 1, Combi 103:	Automatic adjustment	
Synchronous transmission belt tension Bio 103 version 2 at 10 N force, impression:	7 mm	1/4"
Synchronous transmission belt tension Bio 90 at 7 N force, impression:	8 mm	5/16"
Dist. between support plate and drive belt:	3–6 mm	1/8" - 1/4"
Distance belt tensioner control lever and belt guide, disengaged unit:	17 ± 5 mm	$7/16" \pm 3/16$ "

Delivery and dealer service

Pre-delivery service

1. Top up battery with acid and recharge for four hours.
2. Fit the steering wheel, tow plate, and where appropriate other parts.
3. Adjust cutting unit:

Adjust lift springs (effective weight of cutting unit should be 12–15 kg (26,5-33 lb), or set to maximum lift if brush is to be fitted). (Only applies to BioClip and Combi.)

Adjust cutting unit so that rear edge is about 2–4 mm (1/8") higher than front edge.

Adjust cutting unit height setting so that cutting height limit is 5 mm (3/16") above the frame of the unit at the lowest cutting height.
4. Check that engine has correct amount of oil.
5. Check that the right amount of oil is in the transmission. (Not Rider 11)
6. Check and adjust tyre pressure (60 kPa/0,6 bar/8,5 PSI).
7. Connect battery.
8. Fill with fuel and start engine.
9. Check that machine does not move in neutral. (Not Rider 11)
10. Check:
 - Forward drive.
 - Reverse drive.
 - Operation of blades.
 - Seat safety switch.
 - Lift lever safety switch.
11. Check engine revs 2 900 - 3 100 rpm.
Rider 16, 2003- model, 2 800-3 000 rpm.
12. Tell customer about:
 - Need and benefits of following the service schedule.
 - Need and benefits of having machine serviced every 300 hours.
 - The effects of maintenance on the machine's second-hand value.
 - Applications for BioClip and Combi.
13. Complete proof of sale, etc.

After first 5 hours

1. Change engine oil.

Dealer service

25 hours service

1. Change the engine oil on the side-valve engine (With high load and temperature on the overhead-valve engine).
2. Clean/replace the airfilter's pre-filter or oil-foam element, if fitted. (More frequent intervals in dusty operating conditions.)
3. Clean/replace the air filter's filter cartridge (25 hours, 100 hours if pre-filter is fitted). (More frequent intervals in dusty operating conditions.)
4. Check the tyre pressures.
5. Check the mower deck (visual inspection)
6. Lubricate the belt tensioner.
7. Lubricate joints and axles.
8. Adjust the brake (Rider 11).
9. Check the V-belts.
10. Clean the engine's cooling air intake.
11. Check/clean the hydrostatic transmission gear's cooling fins.

50 hours service

1. Carry out 25 hours service as above.
2. Change engine oil.
3. Check the oil level in the transmission. (Rider 13, 16).
4. Check/adjust the parking brake. (Rider 13, 16).
5. Check/adjust the throttle wire.
6. Clean the cooling fins on the engine and transmission.
7. Check/adjust the settings on the mowing deck.
8. Inspect the flame guard/spark arrester. (extra equipment)

100 hours service

1. Carry out 25 hours service as above.
2. Carry out 50 hours service as above.
3. Replace the pre-filter and filter cartridge in the air filter.
4. Replace the fuel filter in the pipe.
5. Clean/replace the spark plug.

300 hours service

1. Inspect the machine. Reach agreement with the customer about which additional work should be carried out.
2. Carry out 25 hours service as above.
3. Carry out 50 hours service as above.
4. Carry out 100 hours service as above.
5. Check the valve clearance on the engine.

At least once a season

1. Change the engine oil (25/50 hours).
2. Replace the pre-filter in the air filter.
3. Replace the filter cartridge in the air filter.
4. Check/adjust the settings on the mowing deck.
5. Adjust the parking brake.
6. Inspect the flame guard/spark arrester (extra equipment).
7. Clean/replace the spark plug.
8. Replace the fuel filter in the pipe.
9. Clean the cooling fins on the engine and transmission.
10. Check the valve clearance on the engine.
11. 300 hours service should be carried out by an authorised service workshop.

Maintenance schedule

The following is a list of the maintenance which should be conducted on the machine. Most of the points that are not covered by this workshop manual are covered by the operator's manual.

Maintenance	Page	Daily maintenance before starting	Maintenance interval in hours		
			25	50	100
Check the oil level in the engine	12	●			
Check the engine's cooling air intake	-	▼			
Check the fuel pump's air filter	-	▼			
Check the steering wires	29	●			
Check the brakes	31	●			
Check the battery	11	●			
Check the safety system	61	●			
Check the screws and nuts	-	○			
Check if there is any fuel or oil leakage	-	○			
Clean around the silencer					
Change the engine oil side-valve engine ¹⁾	28	● ¹⁾	● ¹⁾		
Change the engine oil overhead-valve engine ¹⁾	28	● ¹⁾		● ¹⁾	
Clean the air filter's pre-filter ²⁾	-	▼			
Check the mower deck	47	●			
Check the tyre pressures (60 kPa)	13	●			
Lubricate the belt tensioner ³⁾	-	▼			
Lubricate joints and axles ³⁾	-	▼			
Adjust the brakes, Rider 11	31	●			
Check the V-belts	-	○			
Check the transmission's cooling fins, Rider 13 and Rider 16	-	○			
Check the transmission's oil level, Rider 13 and Rider 16	44			●	
Adjust the brakes, Rider 13 and Rider 16	31			●	
Check and adjust the throttle wire	26			●	
Clean the cooling fins on the engine and transmission ^{2,4)}	-			○	
Replace the air filter's pre-filter and paper filter ²⁾	-				▼
Replace the fuel filter	-				▼
Replace the spark plug	8				▼

¹⁾ First change after 5 hours. Replace after every 25 hours with heavy loads and high temperatures. ²⁾ Cleaning and replacing should be carried out more frequently in dusty conditions. ³⁾ The machine should be lubricated twice a week if used daily. ⁴⁾ Carried out by authorised service workshop.

- = Described in this Workshop Manual.
- = Not described in this Workshop Manual.
- ▼ = Described in the Operating Instructions.



WARNING!

No service procedures must be conducted on the engine or cutting unit unless:

- The engine is switched off.
- The parking brake is applied.
- The ignition key is removed.
- The cutting unit is disengaged.
- The ignition cables are removed from the plugs.

Delivery measures

To our dealer

Well-performed delivery service is the first step to a functioning aftermarket. A functioning aftermarket is in everybody's interest:

- The customer is satisfied with their Rider. He/she knows where to go to get help if problems occur.
- You have a regular customer, who recommends you and your company to other potential customers.
- In this way we build our trademark together, and take joint responsibility for our products and customers.

Make sure the paper work is in good order.

Fill in the warranty and delivery documents etc. and make sure that the customer gets the right Operating Instructions for their machine.

Keep a customer register so that in future you can see which machines customers have, including all the serial numbers. This register will benefit you when ordering spare parts and for future marketing.

In conjunction with the delivery you should also give the customer the information required to ensure the safe handling and care of their machine. Pay special attention to informing the customer about:

- Safety instructions.
- Controls. Emphasise that one does not push in the reversing lock on Rider 11 when engaging the neutral position (start lock function).
- Checking of oil levels. Replenishing of oil, and which type of oil is required.
- First oil change after the running-in period.
- The need for, and advantages of, following the service schedule and regularly handing in their Rider for service.
- Which fuel should be used.
- Mowing tips to get good results. Applications for BioClip.
- Which accessories are available for the type of Rider in question.
- Warranty regulations.
- Your company, and who the customer can turn to if problems occur.

Packaging and unpacking

On delivery from the factory the Rider is normally packed in special packaging. This consists of a wooden bottom board with a top part consisting of heavy-duty cardboard held together by plastic film.

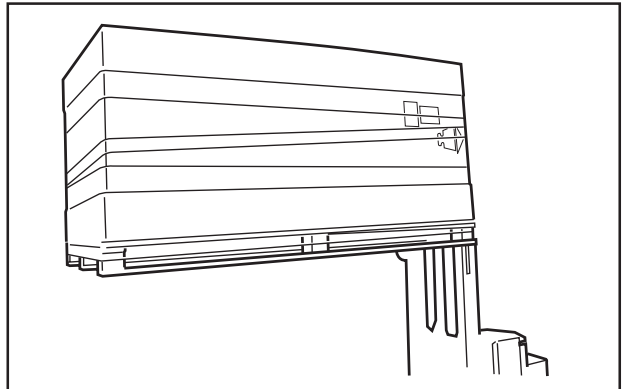


WARNING!
Handle the transport box carefully. Keep the goods as level as possible. Use long forks when lifting from the short side.

The bottom board is provided with pallet feet and the goods can be handled with a normal fork-lift truck from the long side. To keep the goods as level as possible, two men should help the truck driver. Lift the machine and drive the truck carefully.

Undo the plastic film and lift off the cardboard sections. The Rider is placed on the bottom board, braked and secured with wooden blocks. Check that there is no transport damage after removing the packaging. Report any damage to the transport company in accordance with the standard routines.

The packaging should not be returned.



Lifting from the short side requires long pallet forks, see diagram.

Parts enclosed in packaging, Rider

The following parts are enclosed in the transport box:

Number	Part
1	Steering wheel with steering column tube
1	Socket head cap screw steering column tube
1	Lock nut steering column tube
2	Support rollers (BioClip)
6	Battery plugs
1	Operating Instructions
1	Operating and Maintenance Instructions Briggs & Stratton
4	Wheels (certain markets)

Battery



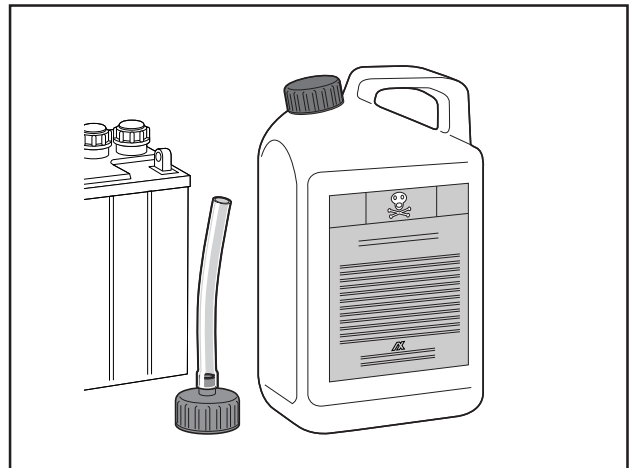
WARNING! Measures for contact with acid

External: Rinse thoroughly with water.

Internal: Drink large quantities of water or milk. Contact a doctor as soon as possible.

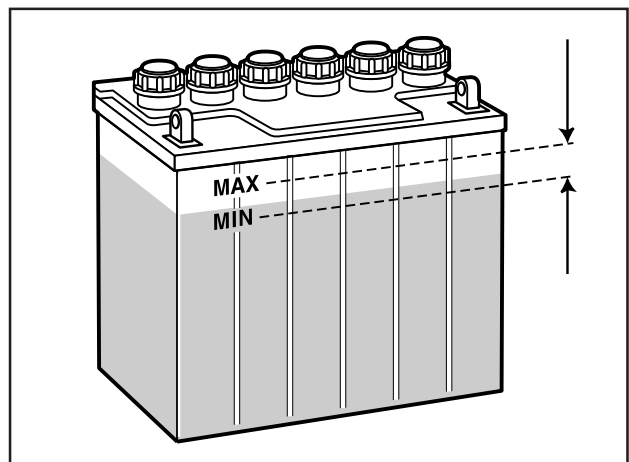
Eyes: Rinse thoroughly with water.
Contact a doctor as soon as possible.

The battery gives off explosive gas. Sparks, naked flames and cigarettes must absolutely not be in the near vicinity of the battery.



The battery is delivered dry-charged from the factory. The cells are fitted with sealing film. The battery plugs are packed in a plastic bag.

- Fill the battery cells slowly with battery acid to the max. level mark on the battery container.
- Wait 20 minutes and top up with battery acid if necessary.
- Charge the battery with 12 V max. 6 A for 4 hours.
- Check the electrolyte level and top up if necessary with distilled water to the top level marks on the battery container.



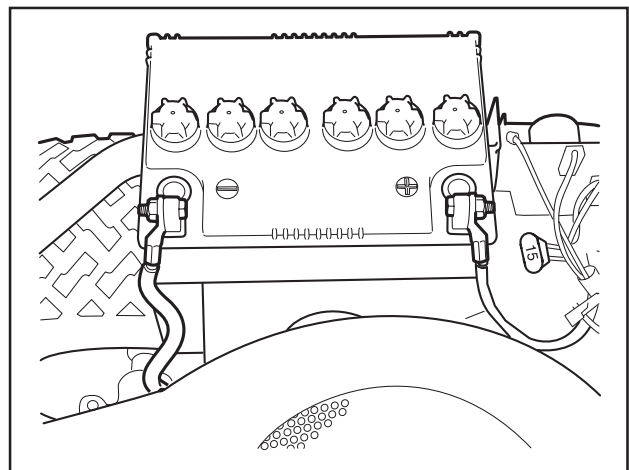
Put the battery in position.

Connect the battery with the screws and nuts fitted on the battery. Brace the screws when fitting to avoid exposing the terminals to strain.

- Black cable is connected to -.
- Red cable is connected to +.

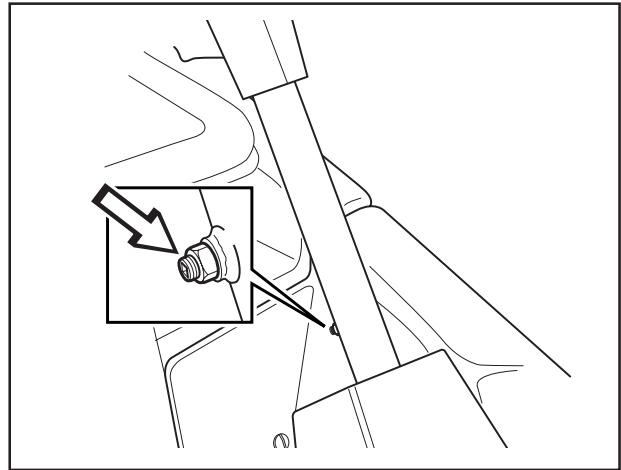
Make sure the cables do not rub against the material.

Fit the cover over the battery and tighten the strap.



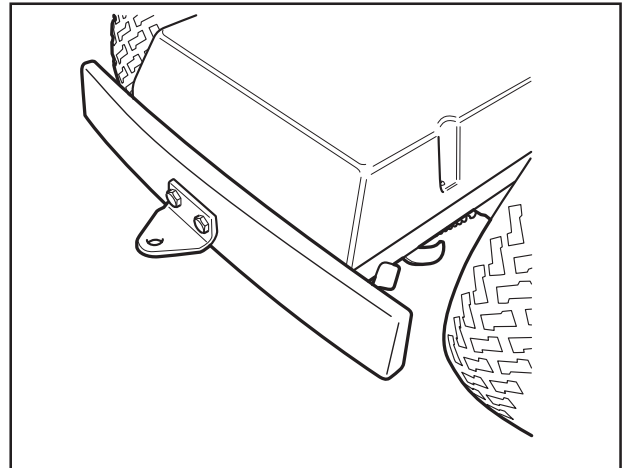
Steering wheel

- Fit the steering wheel with the steering column tube on the steering shaft.
- Screw in the socket head cap screw so that it goes in the slot on the steering shaft. Work on the steering wheel and tighten the socket head cap screw so that it bottoms in the slot.
- Fit the lock nut on the socket head cap screw.



Tow plate

The tow plate is fitted the “wrong way round” at the factory for transport reasons. Fit the tow plate on the rear bumper as shown in the diagram.



Check the oil level in the engine

Check the oil level in the engine when the Rider stands horizontal with the engine switched off.

Lift up the engine cover.

Loosen the dipstick and pull it out. Wipe the dipstick and replace it.

The dipstick should be screwed **fully** down.

Loosen the dipstick and pull it out again. Check the oil level.

The oil level should lie between the markings on the dipstick. If the level is close to the “ADD” mark, top up with oil to the “FULL” mark on the dipstick.

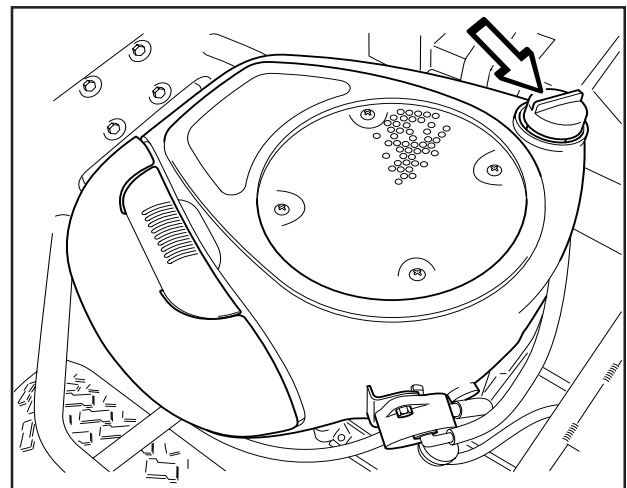
The oil is poured in the same hole the dipstick fits in.

Fill the oil slowly. Tighten the dipstick correctly before starting the engine. Start and run the engine at idling speed for approx. 30 seconds. Turn off the engine. Wait 30 seconds and check oil level. If necessary fill so that the oil comes up to the “FULL” mark on the dipstick.

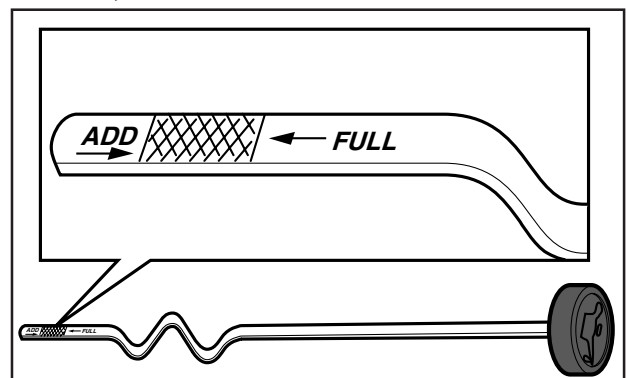
Use engine oil SAE 30 or SAE 10W/30, class SF-CC on all machines up to 2002 models as well as later models of Rider 11 and 13 with side-valve engines.

From 2003 Rider 16 models use first and foremost synthetic engine oil class SJ-CF 5W/30 or 10W/30, otherwise SAE30, class SF-CC.

The engine takes a total of 1.4 litres/1,5 USqt of oil.



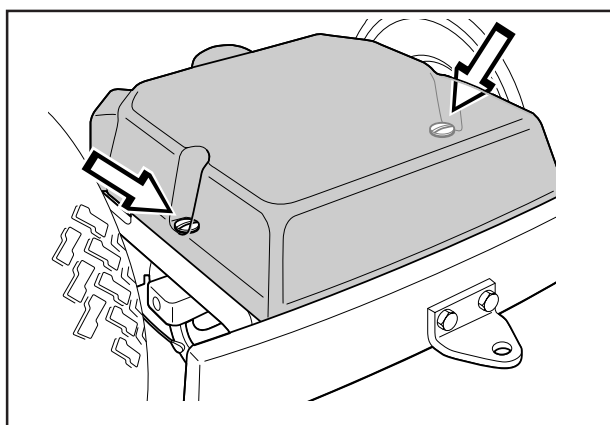
Rider 16, 2003 model



Checking the oil level in the transmission

(Not Rider 11)

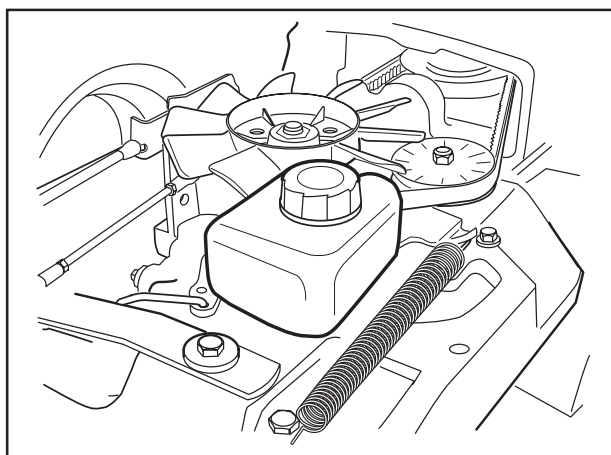
Remove the transmission cover. Loosen both screws (one on each side) and lift off the transmission cover.



Check that there is oil in the transmission's oil tank. Fill if necessary with engine oil SAE 10W/30 (class SF-CC).

IMPORTANT INFORMATION

Check and top up with oil after each test drive. The oil level will drop if there are air pockets in the transmission.



Wheels

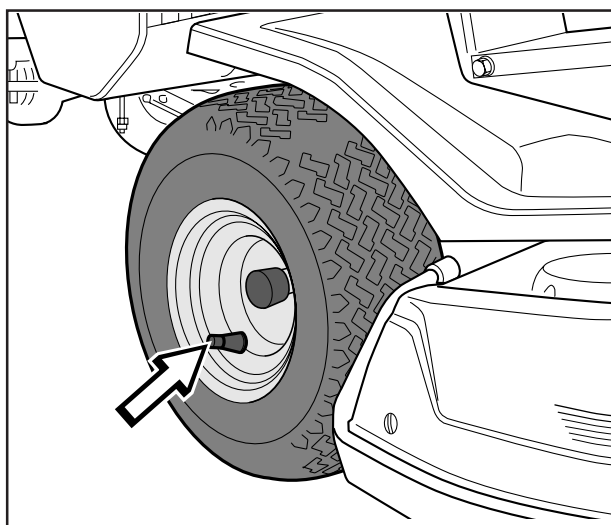
Fit the wheels (certain markets). The tyre pressures should be 60 kPa (0,6 kp/cm²/8,5 PSI) on all the wheels.

To improve the driving capacity the pressure in the back tyres can be reduced to 40 kPa (0,4 kp/cm²/5,6 PSI).

Maximum permitted pressure is 100 kPa (1,0 kp/cm²/14 PSI).

IMPORTANT INFORMATION

Different pressures in the front tyres will cause the blades to cut the grass at different heights.



Checking and adjusting of the mowing deck's ground pressure and parallelism

Carried out after checking the tyre pressures. See respective sections in this Workshop Manual.

Test running

Fill up with petrol. The engine should be run on the lowest 85 octane unleaded petrol (no oil admixture). It can be beneficial to use environmentally adapted alkylate petrol. Do not use petrol that contains methanol.



WARNING!
Petrol is highly inflammable.
Observe caution and fill up with petrol outdoors.



WARNING!
Never run the engine indoors, or in enclosed or poorly ventilated areas. Engine exhaust fumes contain poisonous carbon monoxide.

Start the engine.

Check that the machine is in neutral and standing on level ground when the parking brake is released. (Not Rider 11)

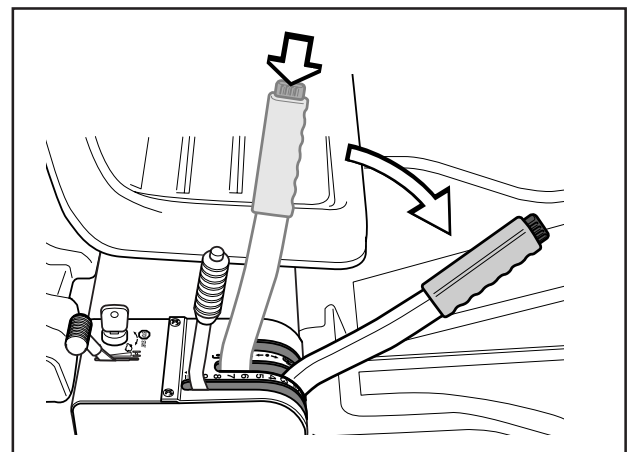
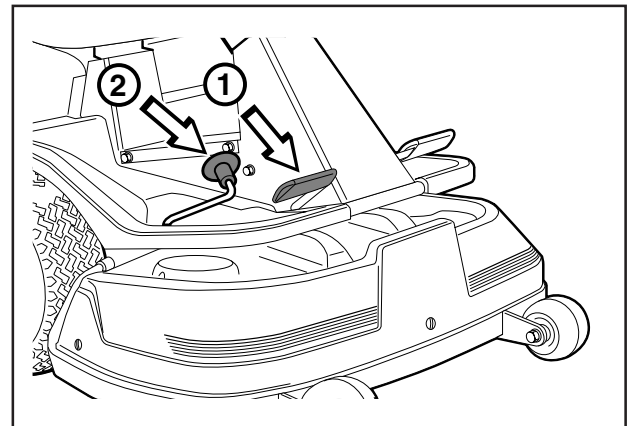
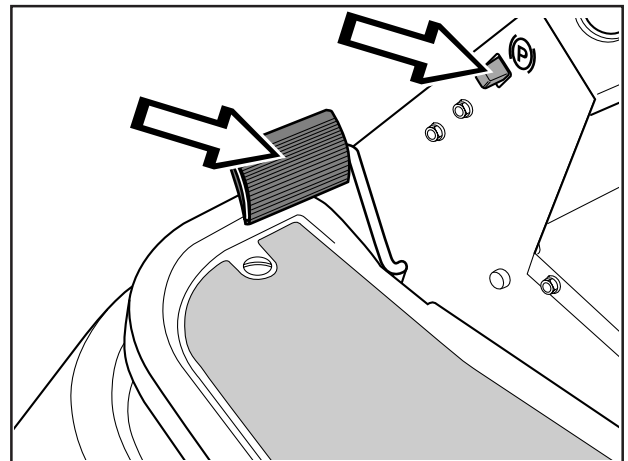
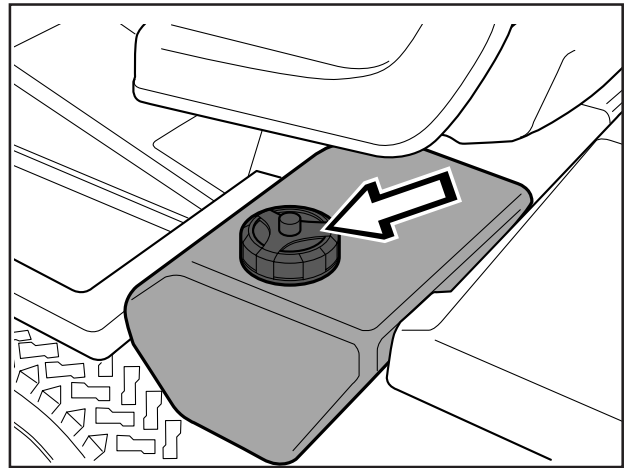
Check the function of the parking brake.

Check driving forwards (1) and backwards (2).

Check that the starter does not function when any of the hydrostatic transmission pedals are activated (Rider 13, 16) or when the gear stick is not in neutral (Rider 11).

Check that the engine stops when getting up from the seat when any of the hydrostatic transmission pedals are activated (Rider 13, 16) or when the gear stick is not in neutral (Rider 11).

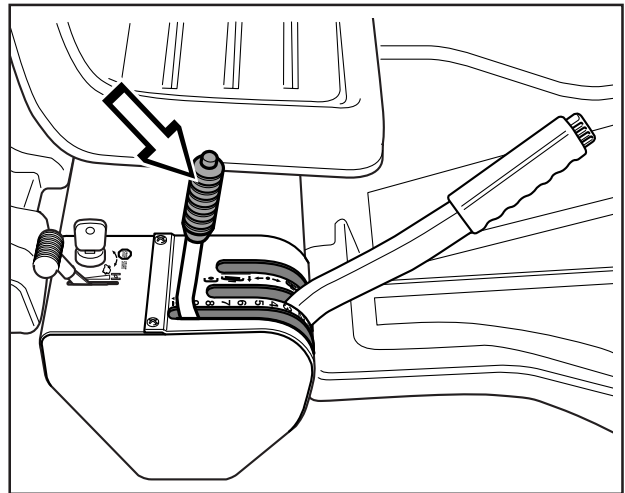
Check that the starter does not function when the mowing unit is in its lower position.



Check the function of the mowing deck and that there is no abnormal noise.

The mowing height can be regulated in 9 different positions with the lever.

Deck with rear ejector,	40-90 mm, mowing height (1 9/16" - 3 9/16")
BioClip- and Combi- deck,	45-95 mm, mowing height (1 3/4" - 3 3/4")



Speed regulator


Check that the engine's maximum speed is regulated at:

Rider 11	2 900 - 3 100 rpm
Rider 13	2 900 - 3 100 rpm
Rider 16	2 900 - 3 100 rpm
Rider 16 2003 -	2 800 - 3 000 rpm

Administration

Fill in the sales certificate and customer register etc.

Do not forget to enter the manufacturing number on page 3 of the operator's manual and to verify the delivery service in the service log.

SERVICESCHEMA RIDER	
Ägare	Datum, mätare, stämpel, sign
Leveransservice	
1. Fyll batteriet med batterisyra samt ladda det i fyra timmar.	<input checked="" type="checkbox"/>
2. Montera ratt, bogrenigla samt i förekommande fall övriga detaljer.	<input checked="" type="checkbox"/>
3. Justera klippaggregat: Justera lyffledar klippaggregatets "vikt" ska bli 12-15 kg.) Gäller endast BioClip.	<input checked="" type="checkbox"/>
Justera aggregatet så att dess bakkant är ca 2-4 mm högre än dess framkant.	<input checked="" type="checkbox"/>
Justera aggregatets klipphöjningsställning så att klipphöjningsreguleringen är 5 mm över aggregatramen vid lägsta klipphöjd.	<input checked="" type="checkbox"/>
4. Kontrollera att rätt mängd olja finns i motorn.	<input checked="" type="checkbox"/>
5. Kontrollera att rätt mängd olja finns i transmissionen (EJ Rider 11).	<input checked="" type="checkbox"/>
6. Kontrollera och justera lufttryck i däck (60 kPa, 0,6 bar).	<input checked="" type="checkbox"/>
7. Anslut batteriet.	<input checked="" type="checkbox"/>
8. Fyll bränsle och starta motorn.	<input checked="" type="checkbox"/>
9. Kontrollera att inte maskinen rör sig i neutralläge. (EJ Rider 11)	<input checked="" type="checkbox"/>
10. Kontrollera: Körning framåt. Körning bakåt. Aktivering av knivar. Säkerhetsbrytare för säta. Säkerhetsbrytare för lyftspak. Säkerhetsbrytare för hydrostoppedalen/neutraläge.	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
11. Kontrollera motorvarvtalet max. 2 950 rpm.	<input checked="" type="checkbox"/>
12. Informera kunden om: Behov och fördelar med att följa serviceschemat. Behov och fördelar med att lämna in maskinen var 300 tim. Service och journalens inverkan på maskinens användningsområde. Användningsområde för BioClip.	Denna leveransservice utförd. Inga kvarstående ärenden/kningar. Intygss:  Åsmt 1 224 92 Klubbap
13. Fyll i försäljningsbevis etc.	<i>Nils Nilsson</i>
Efter de första 5 tim	
1. Byt motorolja.	<input type="checkbox"/>
4. ...	

Design and function

General

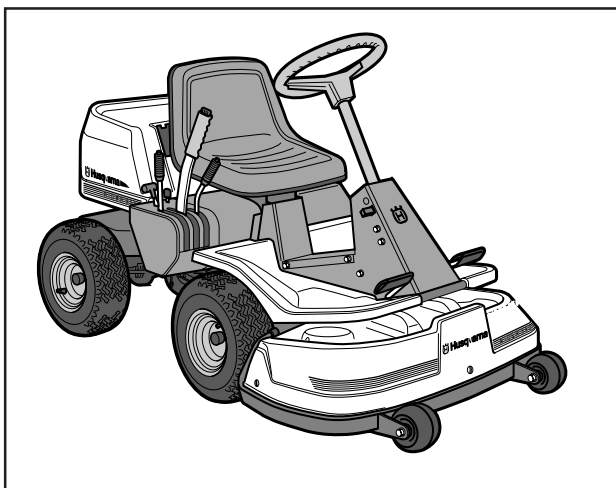
Husqvarna Riders is a series of ride-on mowers with a large capacity. It is available in several sizes, from the smallest Rider 11 to the largest Rider ProFlex 21.

This manual deals with the slightly smaller machines, the larger Pro-and ProFlex machines can be found in a separate manual. All Riders have articulated steering in order to easily cut around trees and other obstacles. Moreover, they all have front-mounted mowing decks for controlled cutting

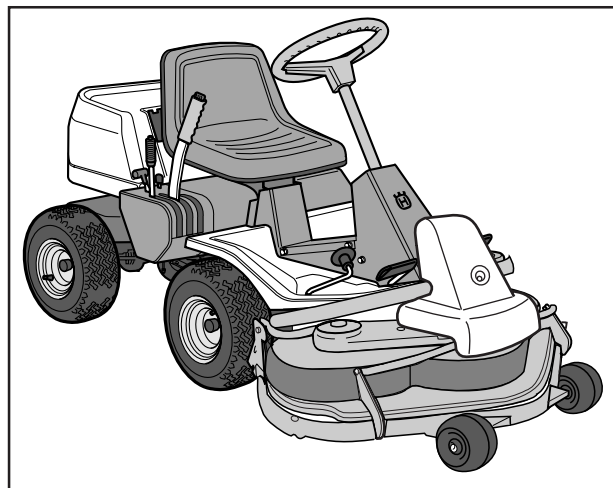
and for best possible cutting results.

Husqvarna Riders can, moreover, be equipped with various accessories such as moss rake and dozer blade which make them flexible working tools throughout the year.

Rider 11 and Rider 11 Bio can be delivered with a manual gearbox, while the other models are only available with hydrostatic transmission.



Rider 11 and Rider 13 have a mowing deck with rear ejection. They can also be ordered with a Bio deck, in which case they are called the Rider 11 Bio or Rider 13 Bio.



Rider 16 is available with different mowing decks.
Bak 97 (rear ejection)
Sido 97 (side ejection)
BioClip 90
Combi 103 or Combi 112.
Earlier versions even BioClip 103 or BioClip 112

Serial number

The serial number can be found on the printed plate attached to the front, left-hand side under the seat. Stated on the plate, from the top are:

- The machine's type designation.
- The manufacturer's type number.
- The machine's serial number.

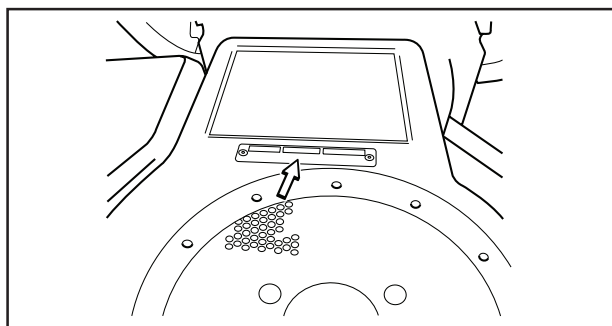
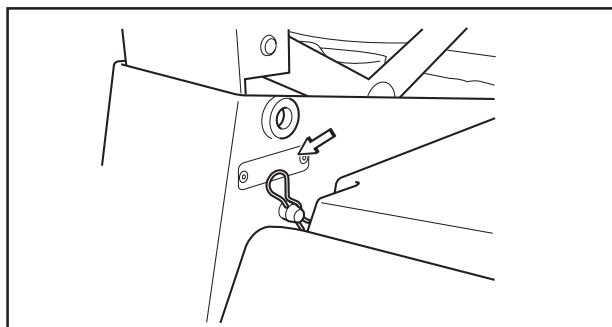
State the type designation and serial number when ordering spare parts.

On older machines the engine's manufacturing number is punched on a plate that is riveted to the fan cover. On newer engines in Rider 16 the data is punched on the cover.

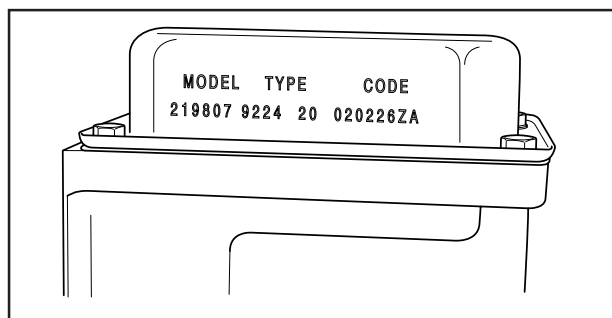
The plate states:

- Model.
- Type.
- Code.

Please state these when ordering spare parts.



Older engines all versions

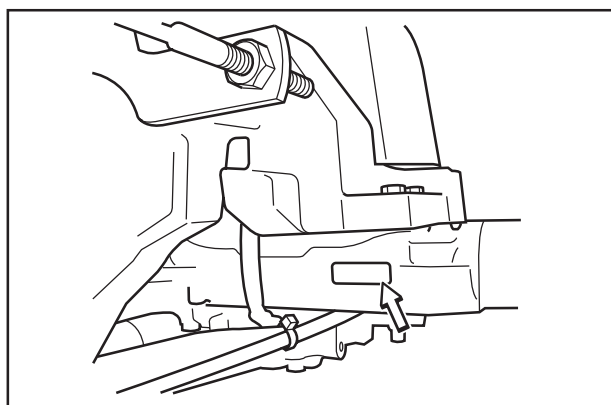


Newer engines Rider 16 (2003-)

The transmission's serial number is stated on the barcode decal located on the front of the housing on the left-hand drive axle:

- The type designation is stated above the barcode and starts with the letter "K".
- The serial number is stated above the barcode and has the prefix "s/n".
- The manufacturer's type number is stated under the barcode and has the prefix "p/n".

State the type designation and serial number when ordering spare parts.



Engine

These Husqvarna Riders have single-cylinder, air-cooled engines from Briggs & Stratton.

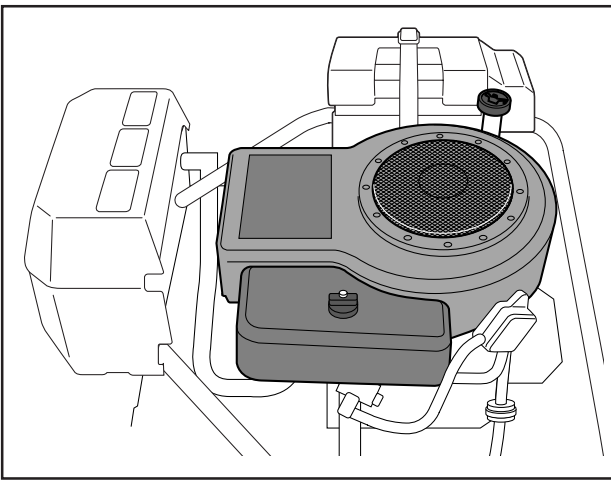
More intricate engine repairs are not described in this workshop handbook, these can instead be read in Briggs & Stratton's own handbooks which contain detailed information about adjusting and repairing the engines. The handbooks can be ordered from an authorized service workshop.

Rider 11 and Rider 13 are fitted with a single cylinder side-valve engine of 10.5 resp. 12.5 hp with splash lubrication. Rider 16 is fitted with a single cylinder overhead-valve engine of 15.5 hp. A new overhead-valve engine with AVS (Anti Vibration System) has been introduced from 2003 models.

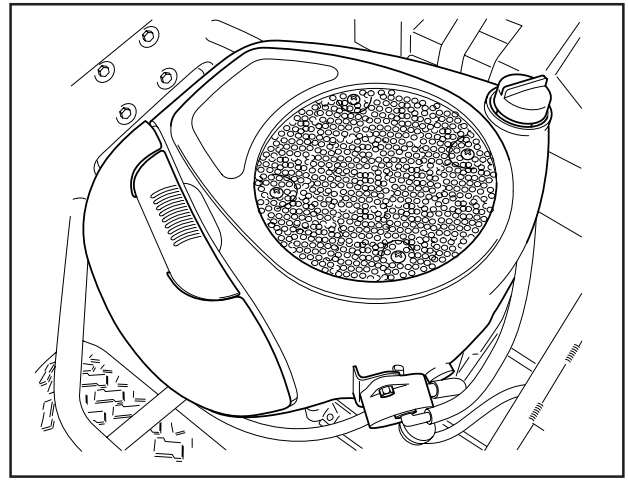
The order numbers for the respective Rider models are found in the table below. Please state these when ordering manuals:

Model	B & S model no.
Rider 11	28B707
Rider 13	286707
Rider 16 -2002	28N707
Rider 16 2003-	282H070110

It is important that only original spare parts are used when repairing the engines. If other parts are used, the guarantee shall no longer be valid.



Side-valve engine Rider 11 and 13

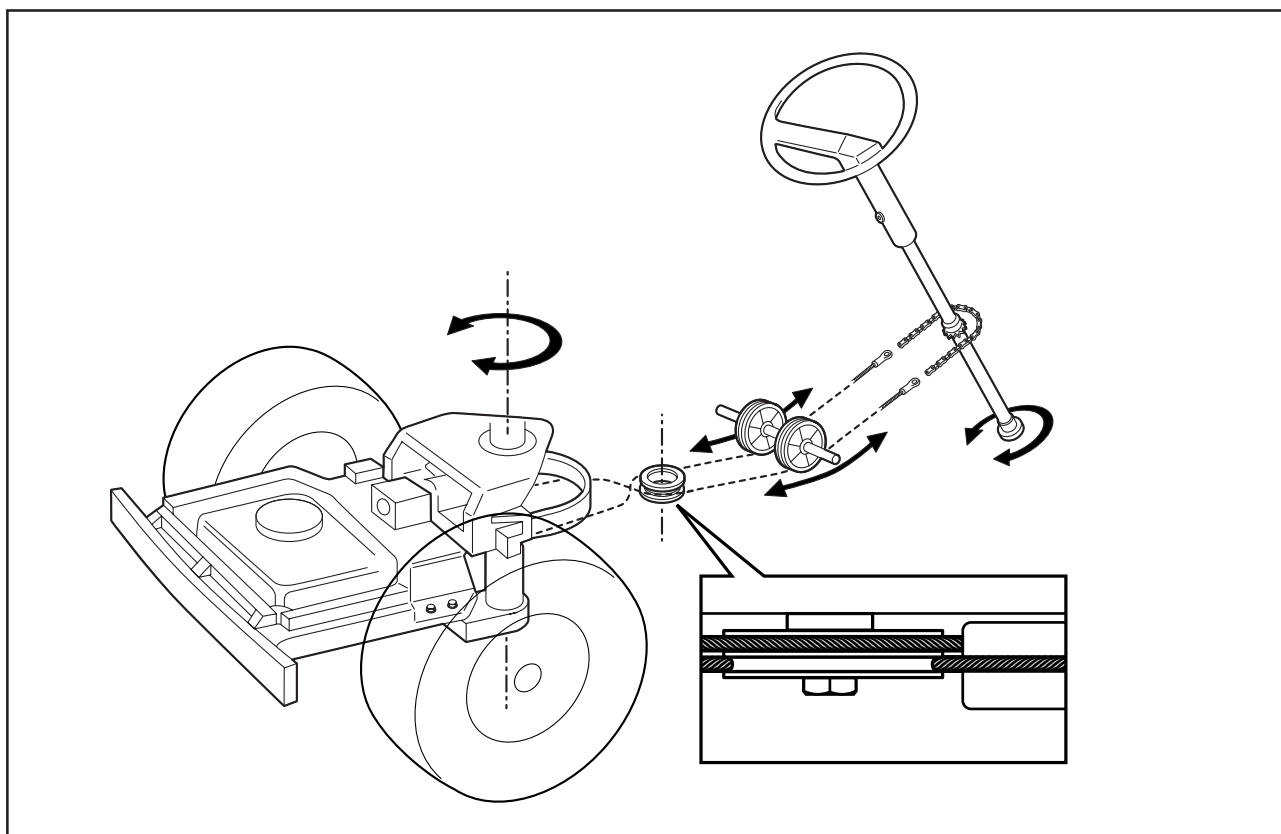


Overhead-valve engine Rider 16 (2003-)

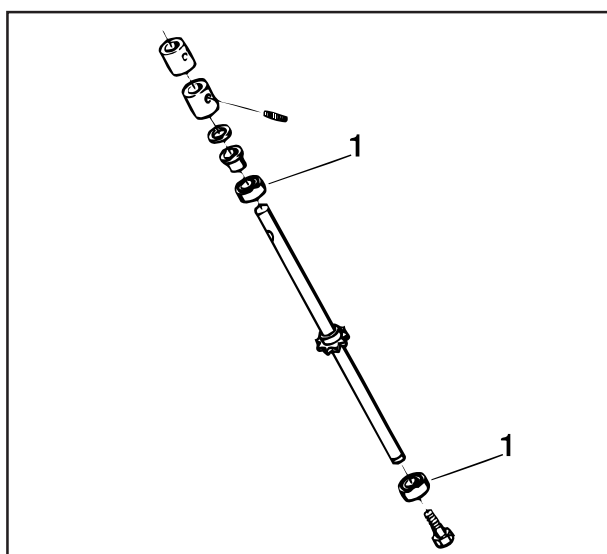
Steering

All the ride-on mowers in the Rider series have articulated steering. The steering force from the steering wheel is transferred to the rear section via wires and a chain. This ensures that the ride-on mower is easy to manoeuvre, as well as having high-precision steering. A Rider easily cuts around all obstacles that may be found on the lawn.

Thanks to the articulated steering, the turning radius is extremely small, the uncut circle when the steering wheel is fully turned is just 20-30 cm (8"-12") depending on which model is chosen.



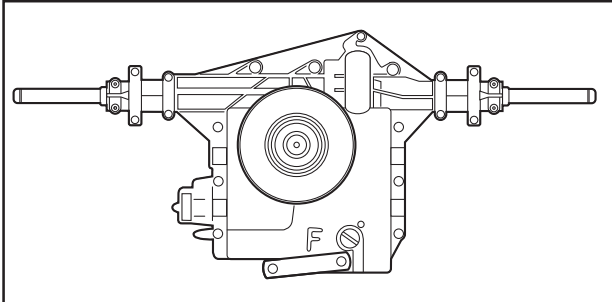
Outline diagram of the articulated steering function.



Rider machines have a sliding bearing (1) on the steering column.

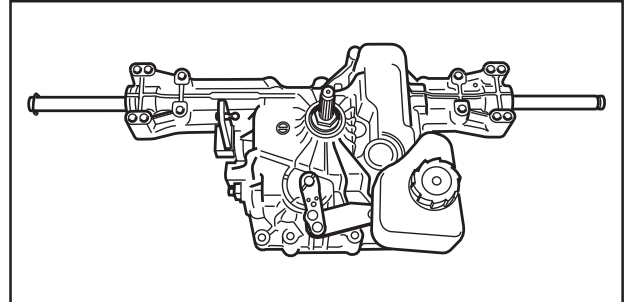
Driving

Rider 11 has a manual gear box with five forward gears, neutral and one reverse gear. This gear box is an "inline" type, which means that you can change from neutral to fifth gear without having to go through all the other gears.

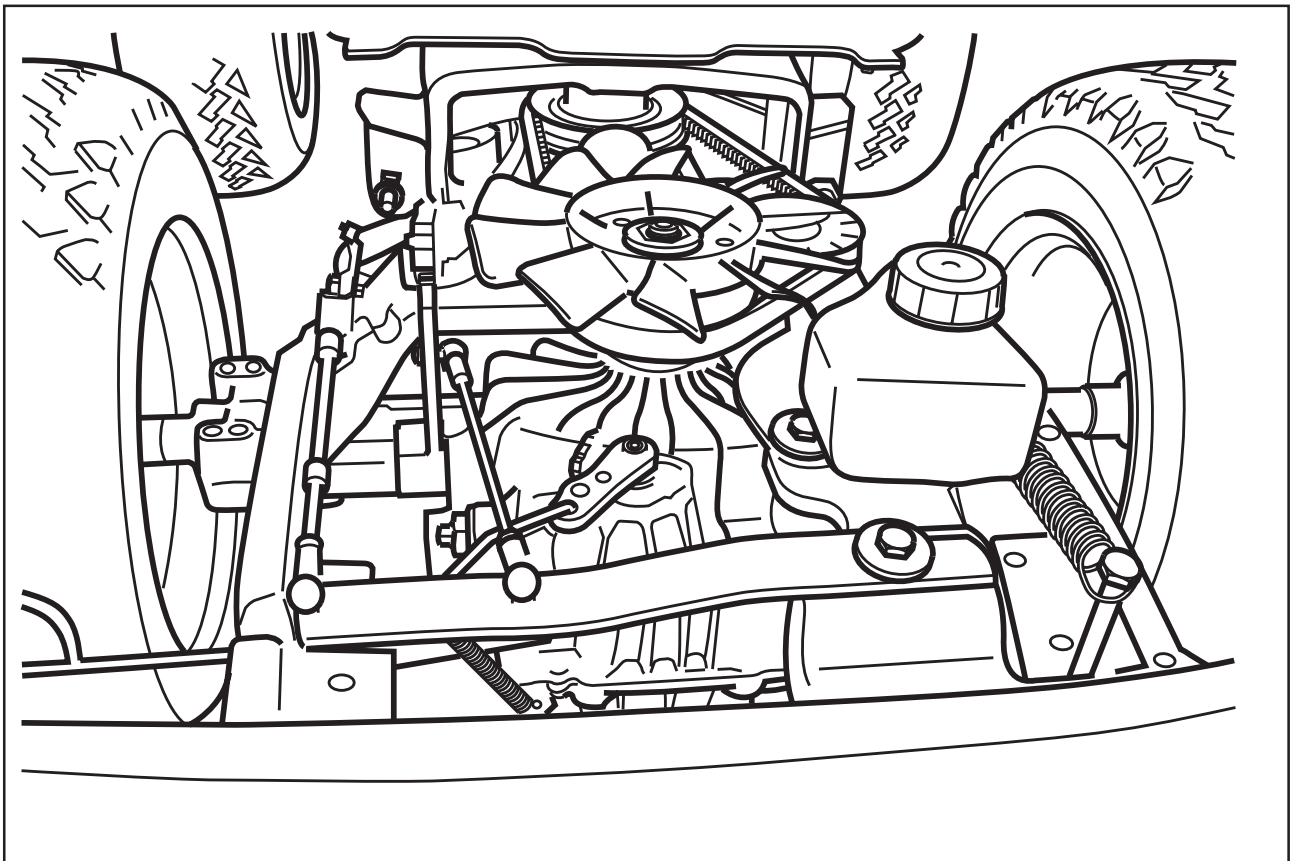


Manual gear box on Rider 11 and Rider 11 Bio.

Rider 13 and Rider 16 are equipped with hydrostatic transmission which provides the driver complete control. Continuously variable speed control, forwards and reverse, is by means of a pedal.



Hydrostatic transmission on Rider 13 and Rider 16.



Mowing deck

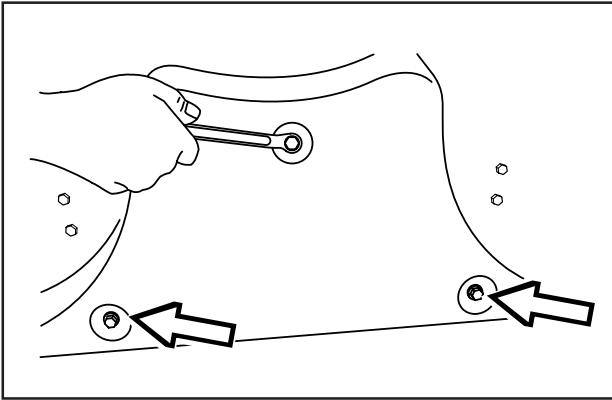
The entire Rider series is equipped with front-mounted mowing decks to ensure effective cutting even in confined areas.

Rider 11 and Rider 13 have a mowing deck with rear ejection and a cutting width of 850 mm (34").

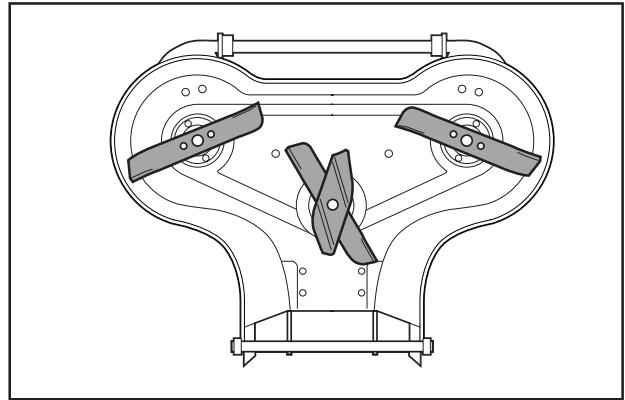
Rider 11 Bio and Rider 13 Bio have a Bio deck with a cutting width of 900 mm (36").

Rider 16 can be fitted with mowing decks with either side or rear ejection where both have mowing widths of 970 mm (38"), BioClip unit with mowing width 900 mm (36") alternatively 1030 mm (41") or Combi unit 1030 mm (41") alternatively 1120 mm (44").

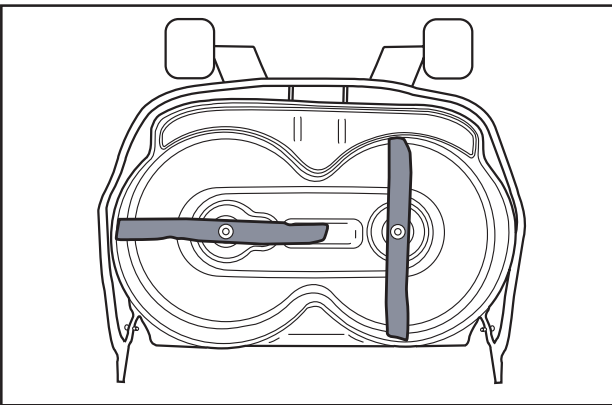
The Combi unit works as a BioClip unit when a BioClip plug is fitted, but can be modified for rear ejection by removing the BioClip plug.



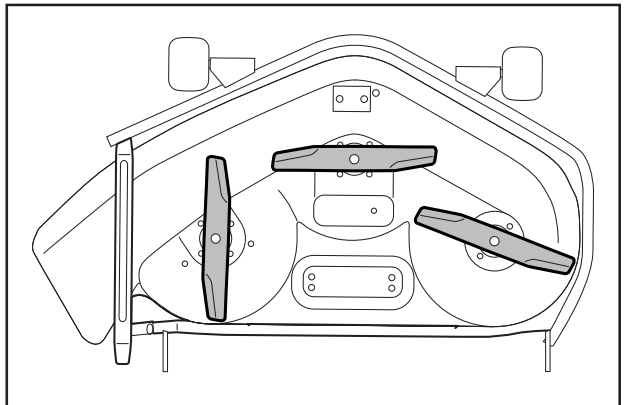
Removing the BioClip plug



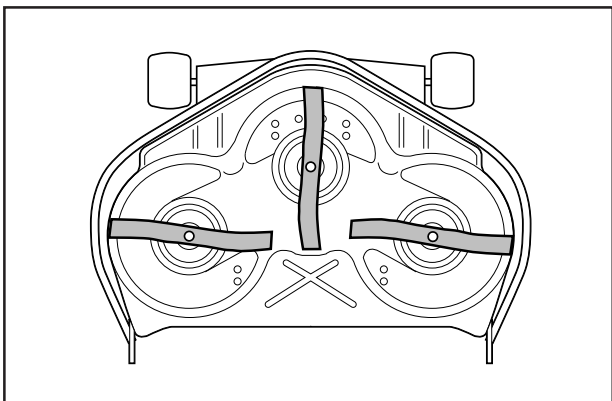
Mowing deck with rear ejection, 850 mm (34").



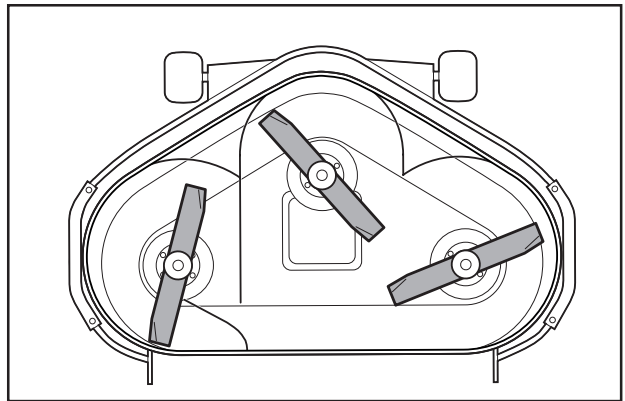
BioClip 900 mm (36")



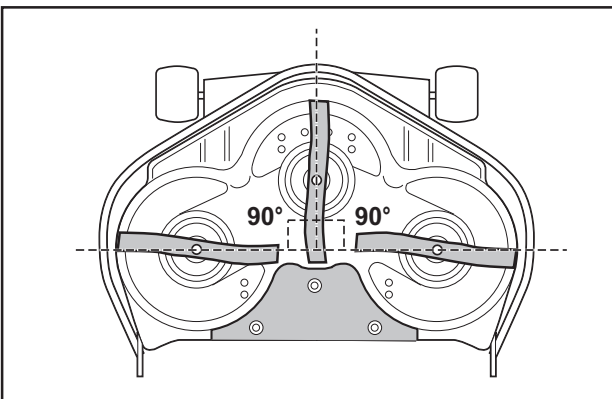
Mowing deck with side ejection, 970 mm (38").



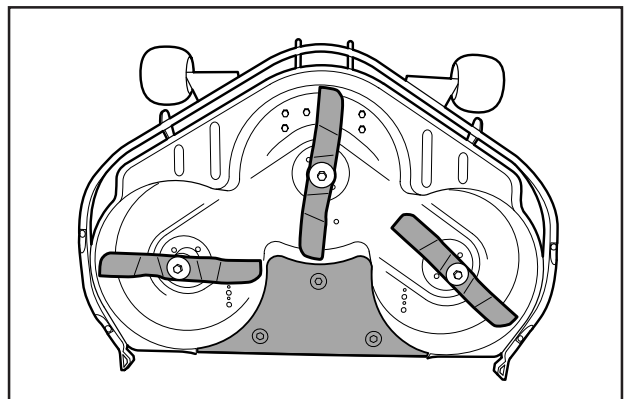
BioClip 1030 mm (41")



Mowing deck with rear ejection, 970 mm (38").



Combi 1030 mm (41").



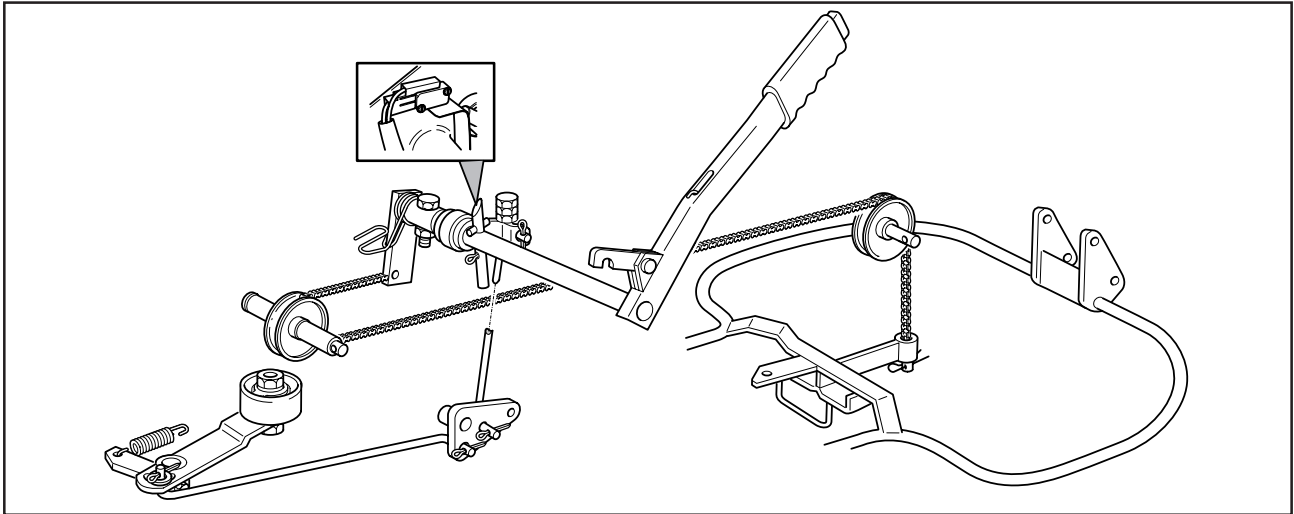
Combi 1120 mm (44").

The mowing deck is raised and lowered using the mechanical lifting lever, which actuates a shaft that rotates.

When the shaft rotates, the chain that is secured in an arm on the inner end of the shaft raises or lowers the tool frame.

When lowering the unit, the two connecting rods, via the three-point link, will alter the belt adjuster so that the drive belt is tensioned and the blades begin to rotate.

When the attachment is raised the microswitch in the safety circuit is actuated.



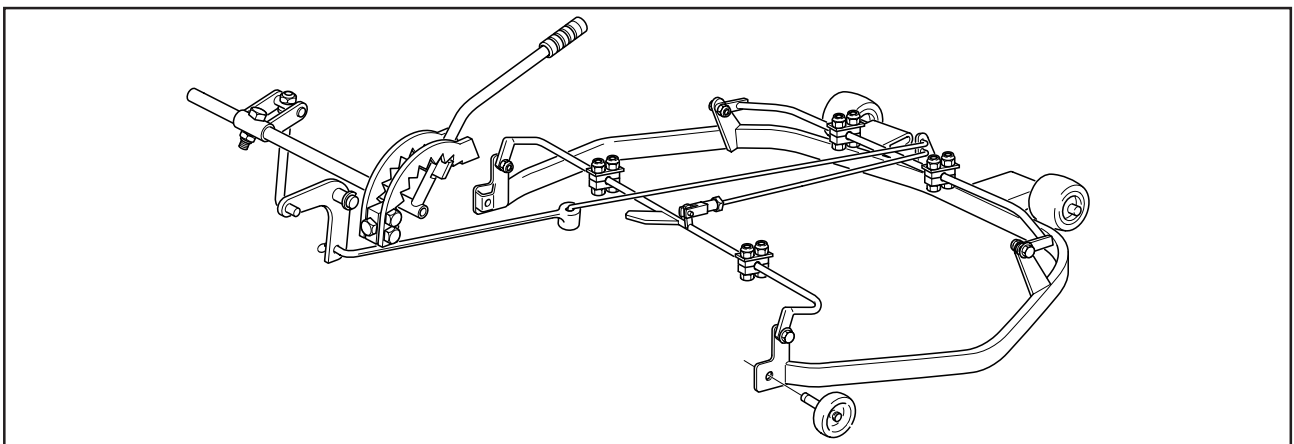
The attachment's lifting device

The mowing deck is rear suspended with the lug on the rear transverse axle in a U-bracket on the tool frame. The front of the tool frame is linked to a bracket on the attachment. The front rollers are supported against the ground, for example, when turning when the attachment tends to lean. The rollers on the rear section of the protective frame are used when removing and fitting the mowing deck or moving it to the service position. Otherwise, when dismantling, the rear of the attachment would fall directly to the ground when the lug on the rear axle releases its grip.

toggle joint actuate the protective frame around the mowing deck and raise or lower the mowing deck's cover within the mowing height range.

There are two struts on the top of the cutting unit cover. The upper one is coupled between the horizontal connecting rod and the tongue of the forward perpendicular shaft on the top of the mowing deck cover. When the shaft is rotated, it will raise or lower the cutting unit cover in relation to the protective frame. The lower strut (parallel strut) is connected between the front and rear transverse axles, so that even the rear axle rotates in the same way as the front axle. There is an adjuster on the parallel strut to adjust the mowing deck cover's parallelism with the ground. See "Checking and adjusting the mowing deck's the parallelism".

The mowing height is adjusted using the lever, which has a catch for the different mowing height positions. The setting for the mowing height range is located on the same axle, see "Adjustment of the mowing height range". Two connecting rods via a



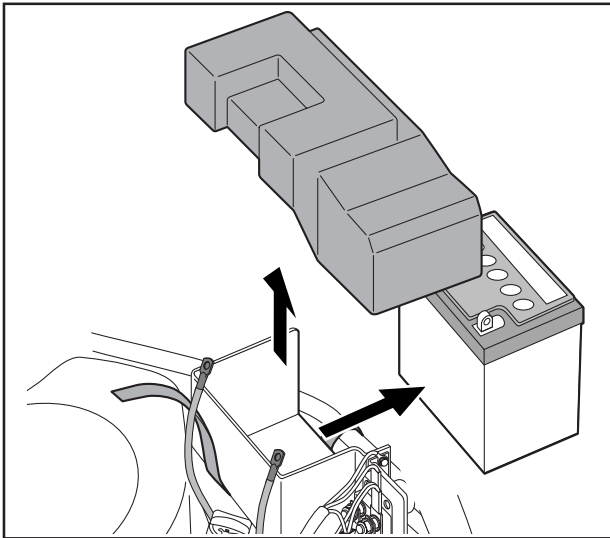
Mowing height manoeuvring

Reparation instructions

Removing engine

The figures under "Dismantling" show Rider 11, 13 and Rider 16 in older designs (R16 up to the 2002 model), for a more recent Rider 16 design (2003-) see "Assembling the engine". The text applies to all versions.

1

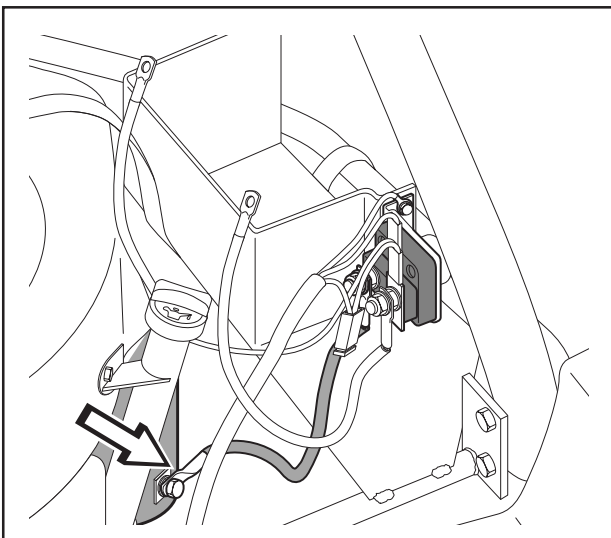


IMPORTANT INFORMATION

Hold the bolts so that the poles are not put under strain.

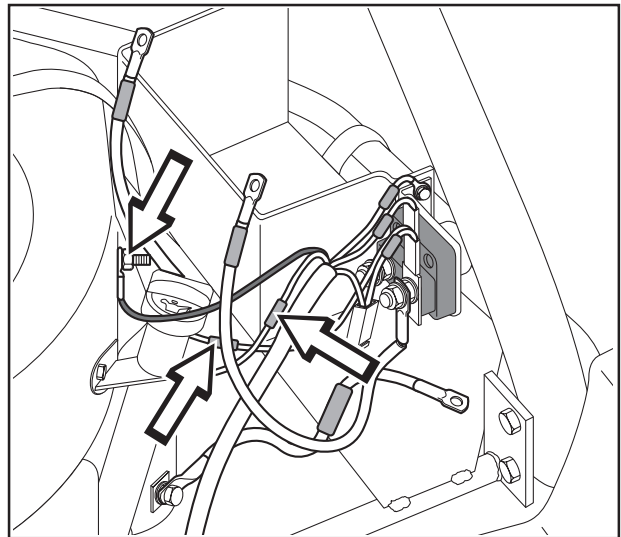
Remove the battery's fixing belt. Remove the safety guard and remove the cable connections. Then, lift out the battery.

2



Remove the cable which leads from the starter relay to the start motor.

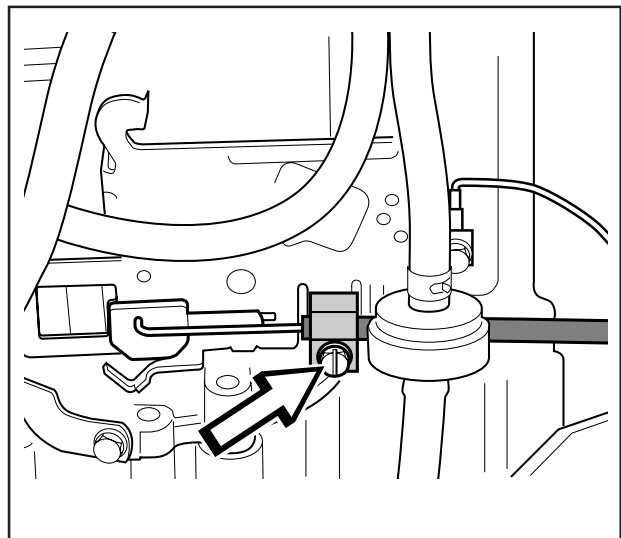
3



Mark up and remove the engine's electrical connections.

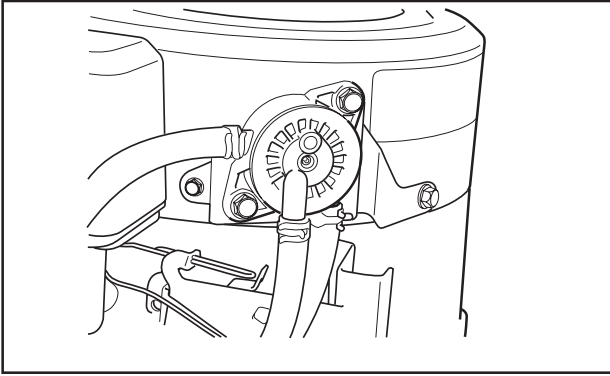
Newer engines, pull the connector apart.

4



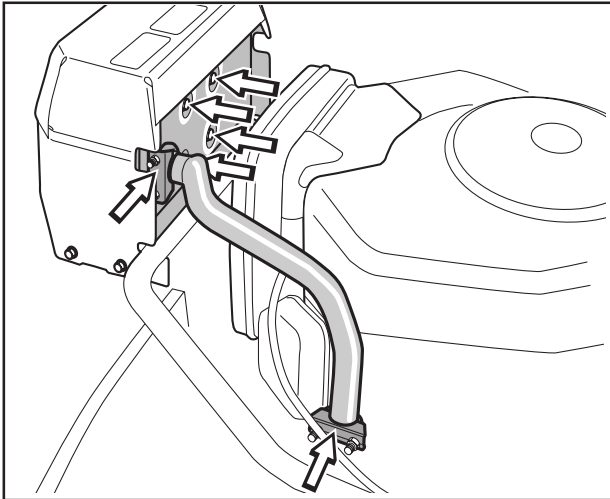
Remove the clamp holding the throttle and choke wire. Unhook the wire at its attachment.

5



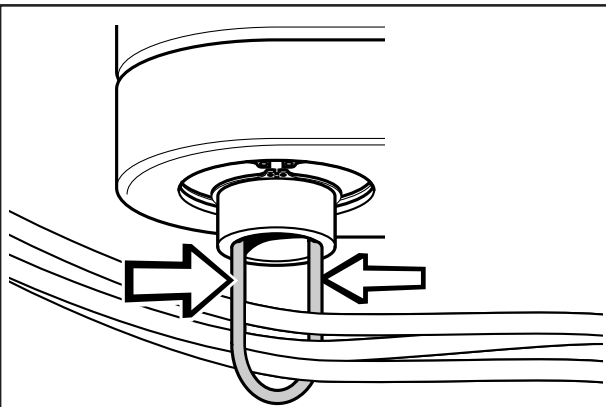
Remove the fuel line hose clamp from the fuel pump and pull the fuel line downwards. Tie the hose higher than the fuel tank level.

6



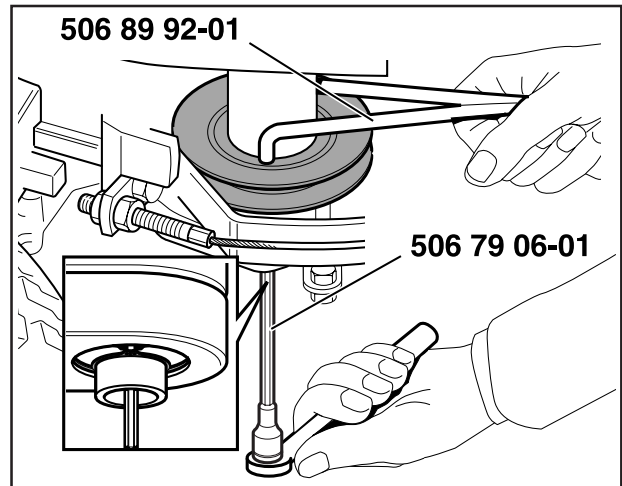
Release the exhaust pipe clamps, and then remove the exhaust pipe.

7



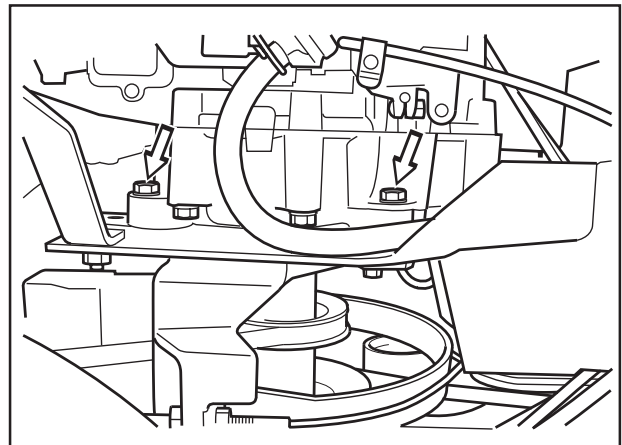
Clamp together the wire holder under the engine pulley with a pair of flat pliers and pull the wire holder downwards.

8



Insert tool no. 506 79 06-01 into the centre of the engine pulley. Unscrew and remove the socket head cap screw which holds the pulley and the engine axle together. Use tool no. 506 89 92-01 as a holder-on. Remove the pulley from the engine axle.

9



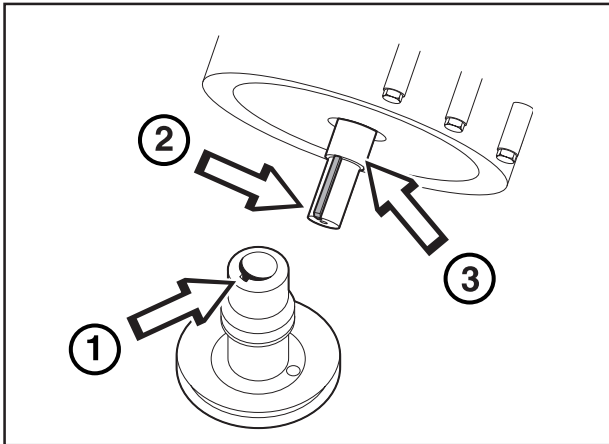
Remove the engine attachments, two on each side of the engine, and remove the engine from the mower.

Watch where the battery's negative cable is connected. Disconnect it from the engine if necessary.

Lift the engine out of the mower, take care of the key and spacer tube, located on the engine shaft.

Replacing engine

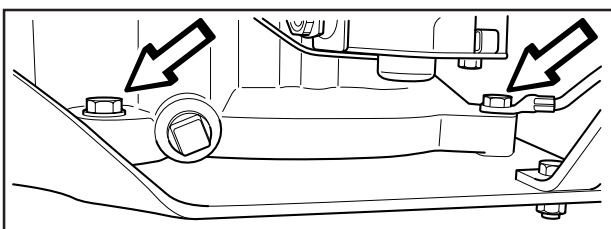
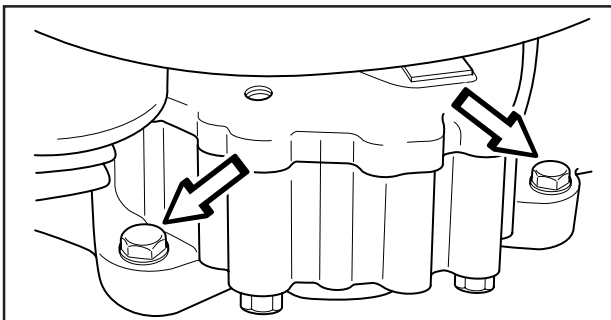
The figures under "Assembling" show the newer Rider 16 model (2003-). For older designs (R16 up to the 2002 model), and Rider 11 and 13 see "Dismantling the engine". The text applies to all versions.



IMPORTANT INFORMATION

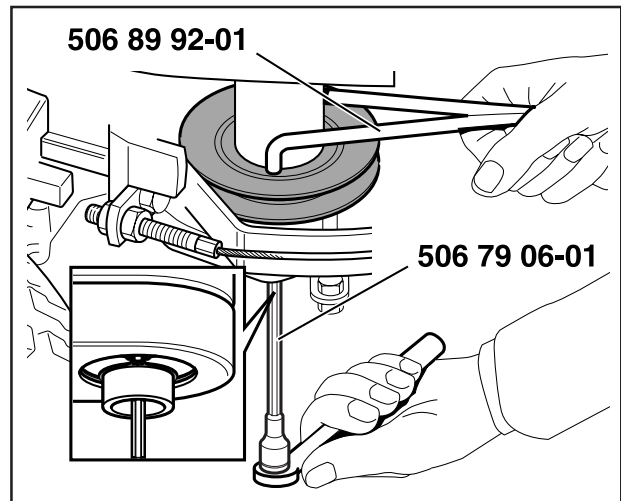
When installing the engine, it is important that the pulley groove (1) is in a position so the outgoing axle key (2) fits into the groove (see diagram). Also check that both spacing collars (3) and the key (2) are firmly attached on the engine axle. Grease the engine axle.

1



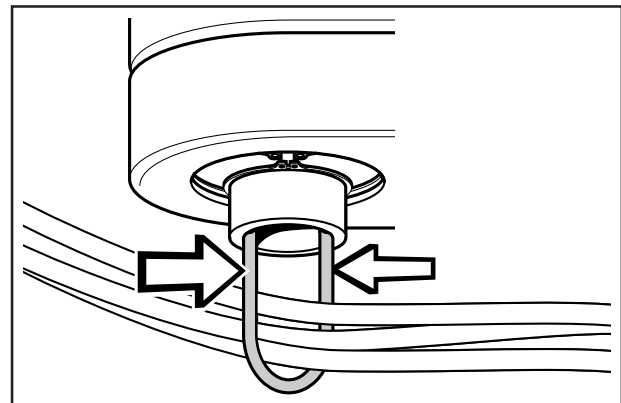
Lower the engine and tighten the engine attachments (two on each side of the engine) with moment (20-25 Nm/14-18 lbf).

2



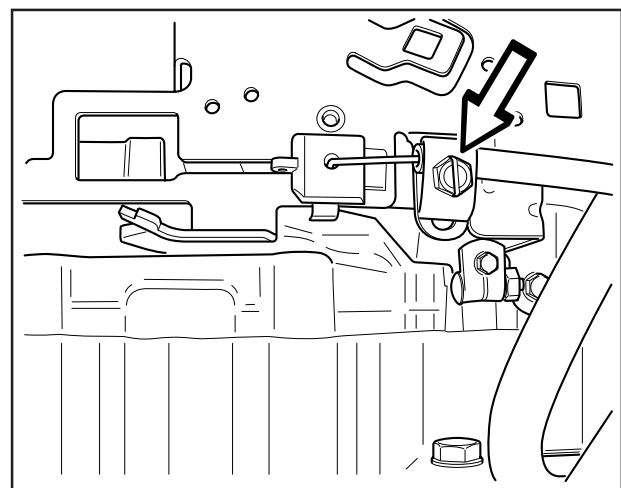
Position the pulley with tool no. 506 79 06-01 and tighten it with moment (70-80 Nm/50-56 lbf). Use tool no. 506 89 92-01 as a holder-on.

3



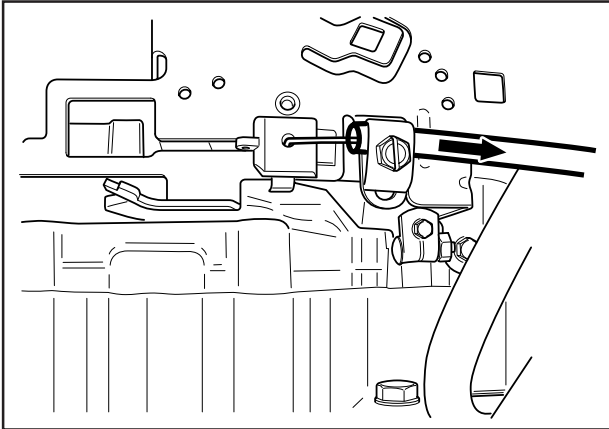
Position the wires in the wire holder, clamp the holder together and, from below, lead it up through the centre of the belt tensioner until it hooks over the tensioner's upper edge.

4

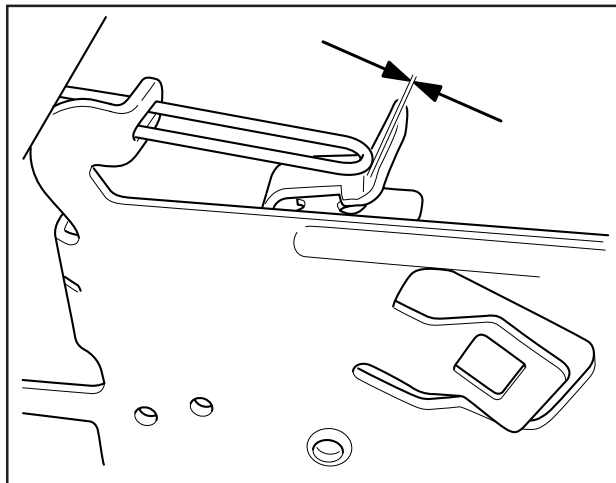


Hook on the throttle wire at the carburettor and fit the wire clamp without tightening it.

5

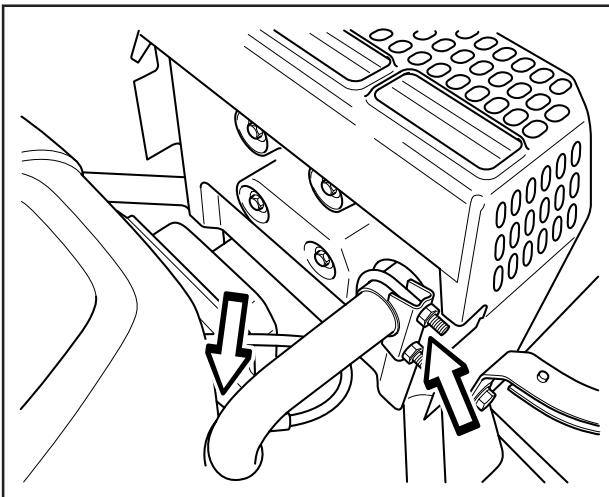


Push the throttle control to full choke position. Pull the wire's outer casing as far to the right as possible and tighten the clamping screw. Pull back the throttle control to the full throttle position and check that the choke is no longer actuated.



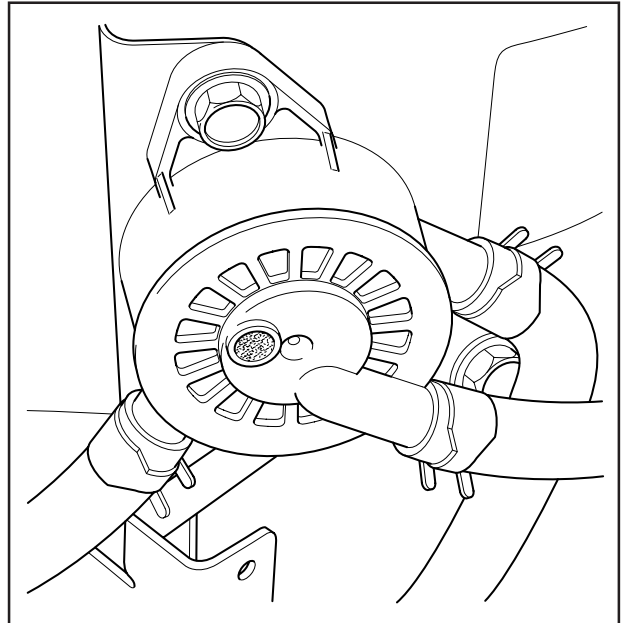
Choke not actuated.

6



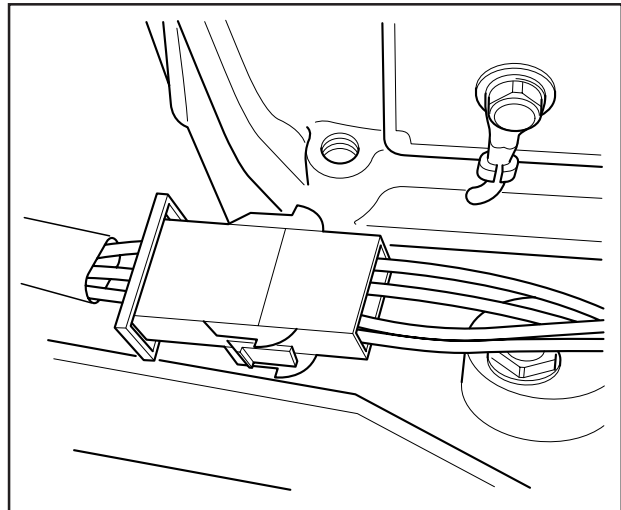
Fit the exhaust pipe and tighten the retaining screws and clamps.

7



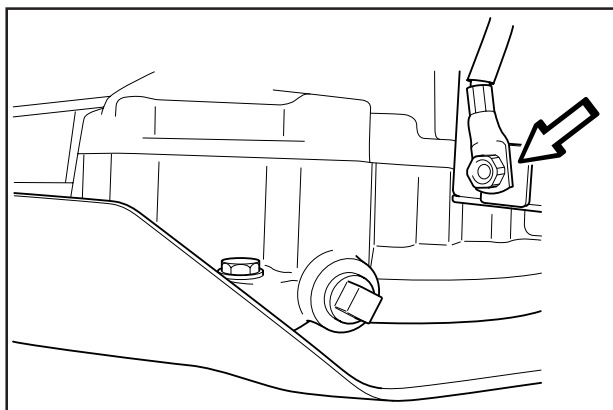
Press the fuel line securely on the fuel pump and fit the hose clamp.

8



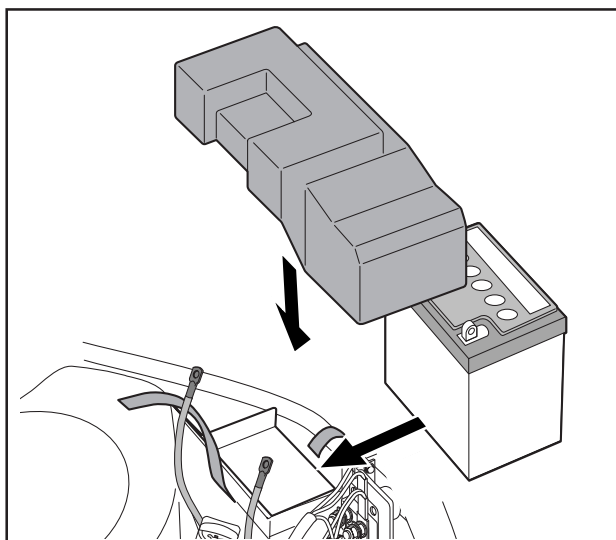
Attach the engine's electrical connections.

9



Tightly screw the cable from the start motor to the starter relay.

10



Lift the battery into place and fasten the cable connections and safety guard. Tighten the catching belt.

Fuel tank

Removal

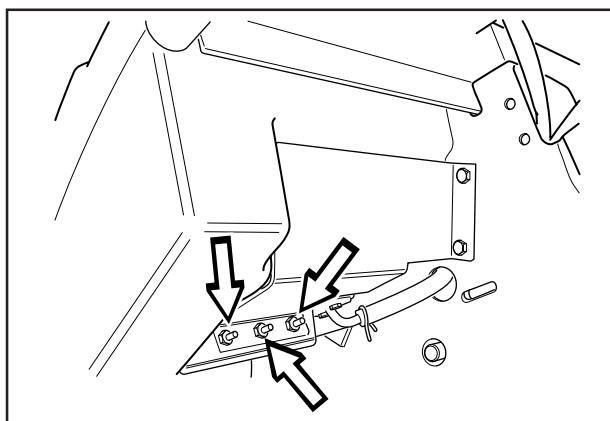


WARNING!
Petrol is highly flammable and environmentally hazardous. Exercise caution to avoid fire and spillage.

1. Place an appropriate container to catch the petrol. The tank holds approx. 7 litres / 7.4 USqt.
2. Empty the petrol tank by removing the hose from the connector under the tank.

If you do not wish to empty the tank, you can pinch the hose with lockable welding pliers and then remove the hose and hose clamp from the fuel filter's lower connector. You must then be sure to keep the hose opening higher than the fuel level in the tank.

3. Remove the three screws that fix the tank to the bracket. Lower the tank and pull out the hose through the frame of the machine (if it has been loosened by the fuel filter).



Fitting

1. It is easier to work if you empty the tank before fitting. Pull the tube into place, pull it under the corner of the crank house, and attach it to the fuel filter with the hose clamp. Make sure that the hose cannot be chafed or rubbed.
2. Position the tank in the bracket, and secure with the bolts.
3. Fit the fuel hose and the hose clamp to the connector under the tank as required. Fill with petrol and check that there are no leaks.

Changing the oil

The engine oil should be replaced after the first five hours of running time, see service chart. Thereafter it should be replaced every 50 hours of running time (25 hours in harsh operating conditions).

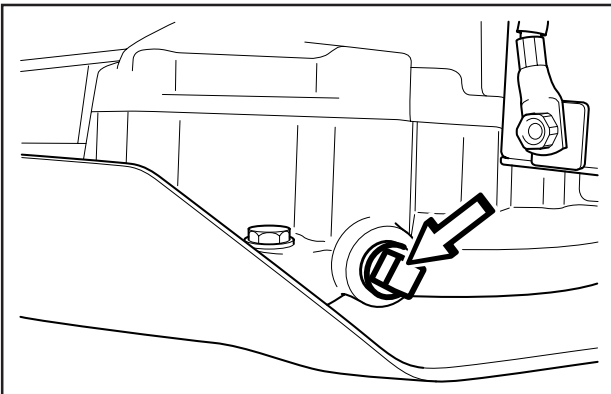


WARNING!
Engine oil can be very hot if it is drained off directly after the engine is stopped. Therefore allow the engine to cool down first.

IMPORTANT INFORMATION

Spent engine oil is hazardous to health and must not be poured out on the ground or in the nature, but should be handed in to a designated place for recycling.

Avoid skin contact and wash any spillage with soap and water.



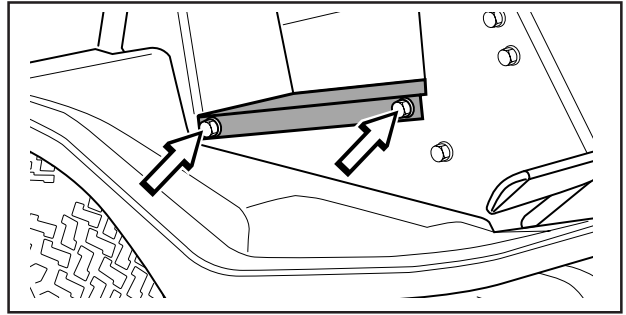
Drain plug on Rider 16

Tip! When draining the engine oil use a folded piece of cardboard to funnel the oil into the container.

Place a container under the drain plug on the left side of the engine.
Remove the dipstick and drain plug. Let the oil drain into the container.
Refit the drain plug and tighten it.
Fill with oil up to the "FULL" mark on the dipstick.
Pour the oil into the same hole the dipstick goes in.
Filling procedure, see "Delivery measures/Checking the engine's oil level". Use engine oil as set out in the "Specifications" chapter.
Run the engine until warm, then check that there are no oil leaks from the drain plug.

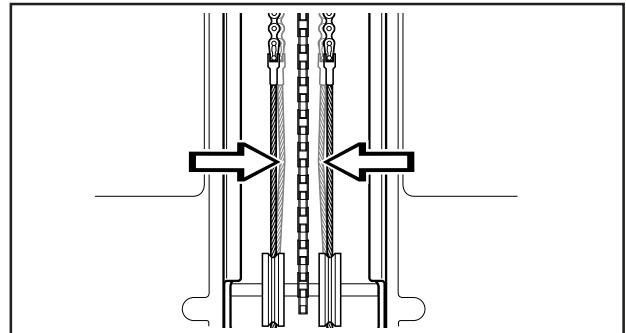
Checking and adjusting steering wires

1



Remove the frame plate by releasing the screws (two on either side).

2

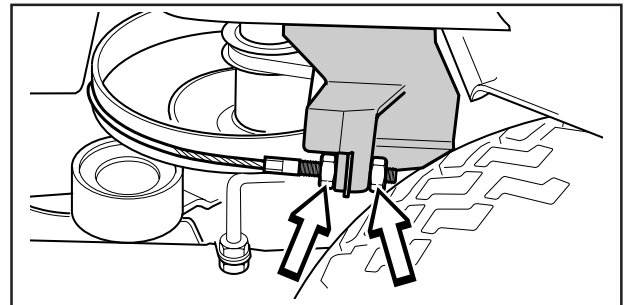


Ensure that the cables are properly situated under the steering cable pulleys in the frame tunnel.

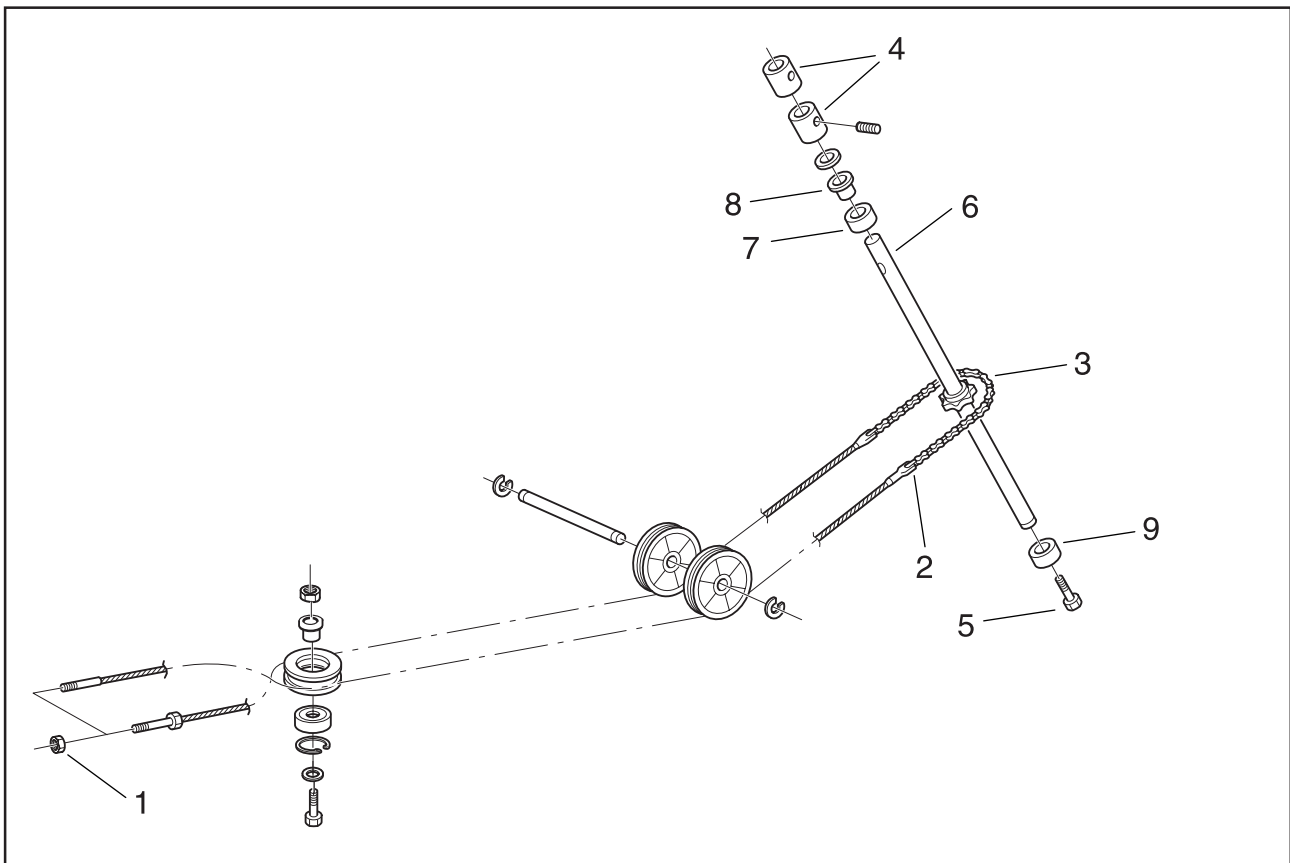
The tension is checked by squeezing together the wires (as shown in the diagram). Without having to apply too much force, the wires should be able to be squeezed to half the distance between them.

Change the cable if it has a damaged strand causing loose threads to protrude.

3



Hold the wire so it does not twist.
Stretch the wires by tightening the adjuster nuts (one wire on each side of the ride-on mower). Do not overtension them, they should only be tightened up to the steering rim. Stretch both wires equally so that the steering wheel position is not changed.
Check the wire tension as set out in point 2 after you have made the adjustment.



Replacing steering wires

1. Release the steering wires' rear attachment (1).
2. Remove the frame plate.
3. Release the steering wires' front attachment (2) at the steering transmission chain (6) and pull the steering wires out through the frame.

Note. If the old wires are still complete, the new wires can be attached to the old ones when they are pulled out through the frame, the new wires will then come automatically into place.

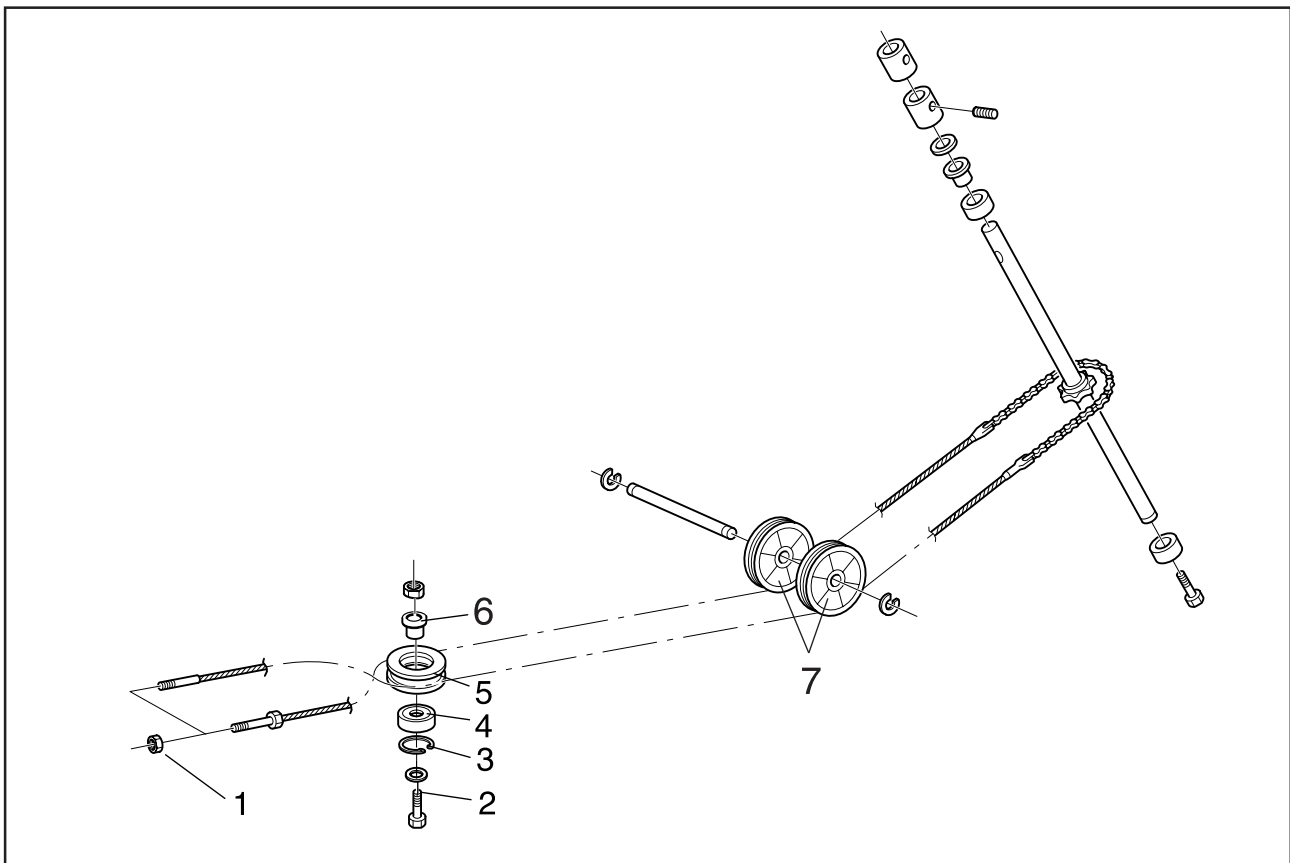
4. Ensure that the steering wheel is in the centre position when the rear wheels are centred. Re-set the chain on the steering column's sprocket or adjust the rear fixture (1) for the steering cables as needed.

Hold the cables with, for example, a wrench when mounting so that they do not twist.

Attach the new wires. Once the new wires are in place, check the wire tension (see "Checking and adjusting steering wires").

Removal/installation of steering axle

1. Release the steering wires' rear attachment (1). Remove the frame plate.
2. Remove the steering wheel and steering column by releasing the lock nut and unscrewing the locking screw, lift the steering wheel and steering column upwards.
3. Remove the two steering wheel rod carriers (4).
4. Unscrew the bolt (5) from the bottom end of the steering column.
5. Pull the steering axle (6) upwards and move the lower part of the axle backwards to remove the steering transmission chain (3).
6. Move the upper bearing (7) upwards until it goes free from the steering axle (6). If the bearing is to be replaced, the bushing (8) must be knocked out of the bearing.
7. Slide the bearing (9) off the bottom end.
8. Take the steering axle out (6) downwards.
9. To assemble the steering axle, the reverse order is applied. For assembly purposes, the two steering wheel rod carriers (4), are tightened with moment (5–10 Nm/3,5-7 lbf).



Removal/installation of wire wheel

1. Remove the frame plate.
2. Detach the steering wires' rear attachment (1) .
3. Remove the screw (2) and detach the wire wheel (5).
4. Remove the bearing's circlip (3) and knock out the bearing (4).
5. To install the wire wheel, the reverse order is applied.

The screw (2) is to be mounted in the rear hole on the frame. The bushing (6) is to be placed between the frame and the cable pulley.

Ensure that the cables are properly situated under the steering cable rollers (7) in the frame tunnel.

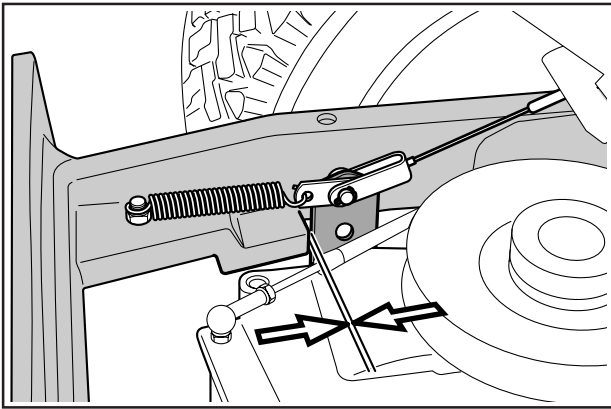
Ensure that the steering wheel is in the centre position when the rear wheels are centred. Reset the chain on the steering column's sprocket or adjust the rear fixture (1) for the steering cables as needed.

Hold the cables with, for example, a wrench when mounting so that they do not twist.

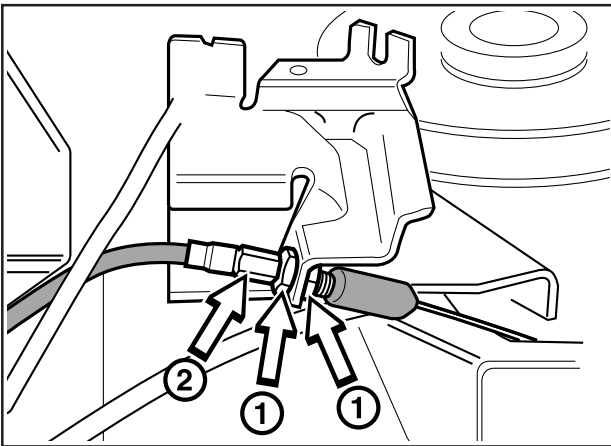
After installation, check the wire tension (see "Checking and adjusting steering wires").

Checking and adjusting brake wire

Rider 11



Check that the brake is correctly adjusted by measuring the distance between the brake lever and the front edge of the recess on the chassis. The distance should be 0–1 mm/0-0,040" when the brake is not applied.



1. Remove the lock nuts (1).
2. Stretch the wire with the adjuster screw (2) so that the distance between the brake lever and the front edge of the recess on the chassis is 1 mm/0,040".
3. Tighten the lock nuts (1) after adjustment.

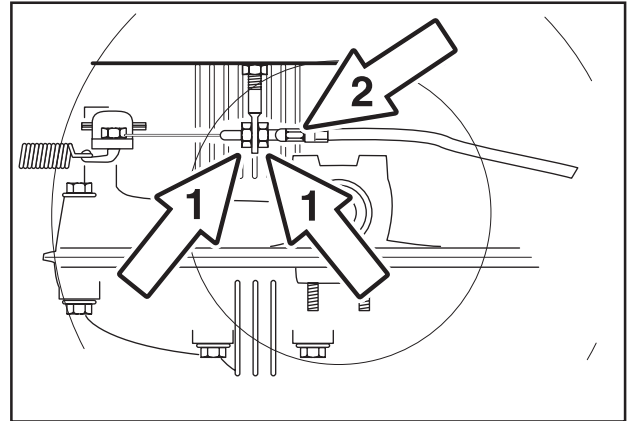
When the brake wire has been adjusted, check that the brake lever does not have too much movement. If the lever's free movement exceeds 9 mm/3/8", this should be adjusted by tightening the nut on the brake lever.

Rider 13 and Rider 16

Check that the brake is correctly adjusted by positioning the ride-on mower on a gentle slope and applying the brake.

If the ride-on mower does not stand still, the brake needs to be adjusted.

The brake is adjusted in the following way:

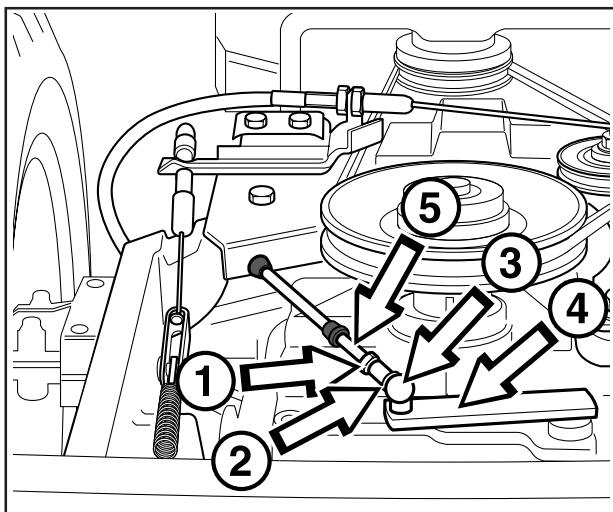


1. Release the lock nuts (1).
2. Stretch the wire with the adjuster screw (2) until all the play in the wire disappears.
3. Tighten the lock nuts (1) and finally check that the brake is correctly adjusted.



WARNING!
A badly adjusted brake can lead to reduced braking capacity.

Checking and adjusting gear control Rider 11



Check the gear control adjustment by setting the gear change lever to the "N" position. When the lever (4) goes easily into the neutral position, the control is correctly adjusted.

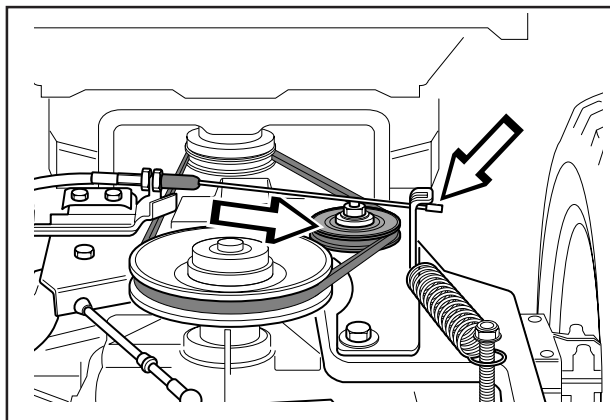
In other cases, the control is adjusted in the following way:

- 1 Detach the lock nut (1) on the ball joint.
- 2 Press the locking spring (2) backwards so that the spherical socket (3) can be lifted away from the pivot on the lever (4).
- 3 Adjust the spherical socket (3) position on the connecting rod (5) until the right adjustment is obtained.
- 4 Lock the setting with the lock nut (1) and press the locking spring (2) into position.

IMPORTANT INFORMATION
Check that the locking spring goes through the hole in the spherical socket.

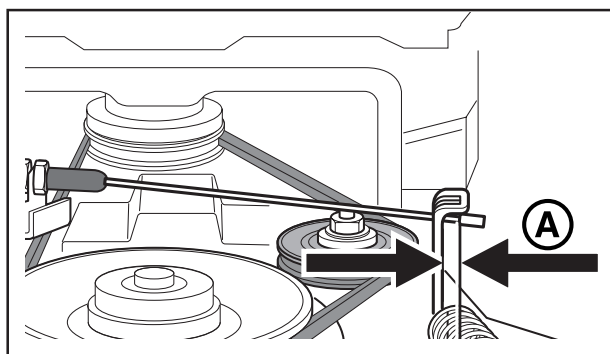
Checking and adjusting freewheel clutch Rider 11

1



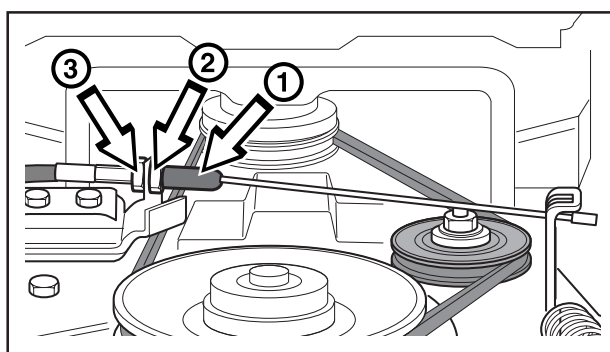
The freewheel clutch is correctly adjusted when the tensioning wheel's outward movement is stopped by the belt and not by the wire.

2



There should be a play (A) of 8-10 mm/5/16" - 3/8" between the wire nipple and the lever.

3

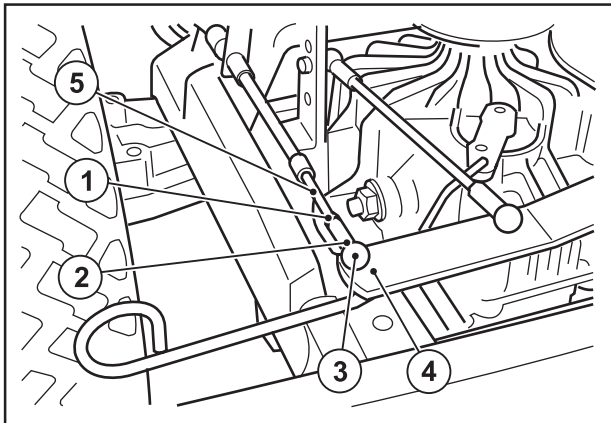


Adjust the freewheel clutch wire as follows:

- Pull out the rubber sleeve (1). Loosen the nut (2) and adjust the wire using the adjuster screw (3).
- Tighten the lock nut (2) after adjustment.

Checking and adjusting throttle control

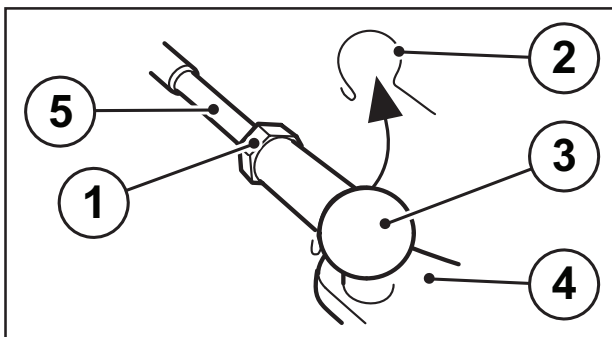
Rider 13 and Rider 16



1. Detach the locking nut (1) on the ball joint.
2. Push the lock spring (2) forwards far enough for the spherical socket (3) to be lifted off from the pivot on the lever (4).
3. Press the throttle pedal to the bottom and move the lever (4) forwards as far as it goes using a screwdriver.
4. Adjust the position of the spherical socket (3) on the connecting rod (5) so that it just fits over the pivot on the lever. Fit the spherical socket on the pivot.
5. Lock the setting with the lock nut (1) and press the locking spring (2) into position.

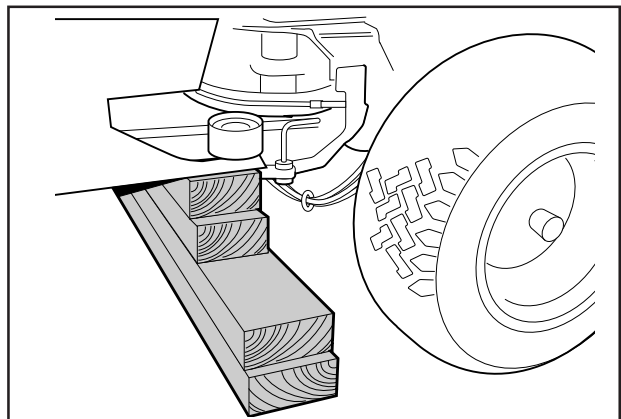
IMPORTANT INFORMATION

Check that the locking spring goes through the hole in the spherical socket.



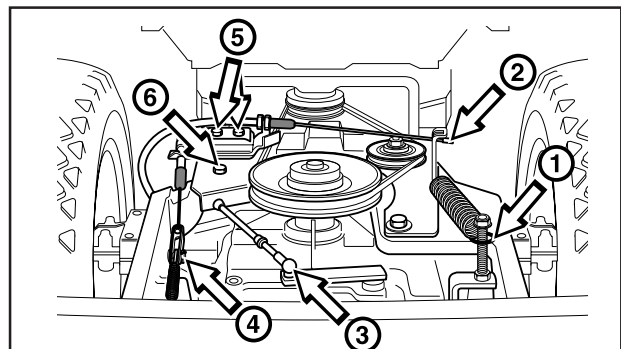
Replacing articulated steering bearing

1



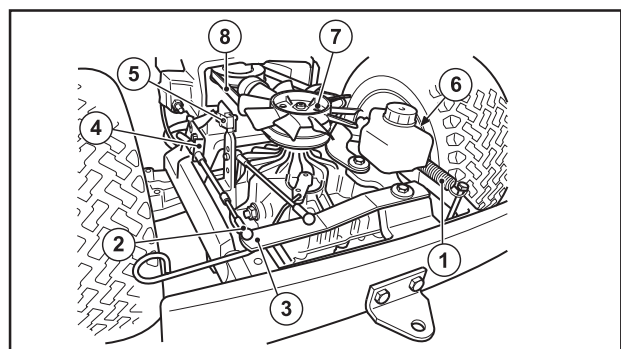
- Remove the engine according to the earlier description (see "Removing engine").
- Block up the ride-on mower in front of the articulated steering.

2 Rider 11

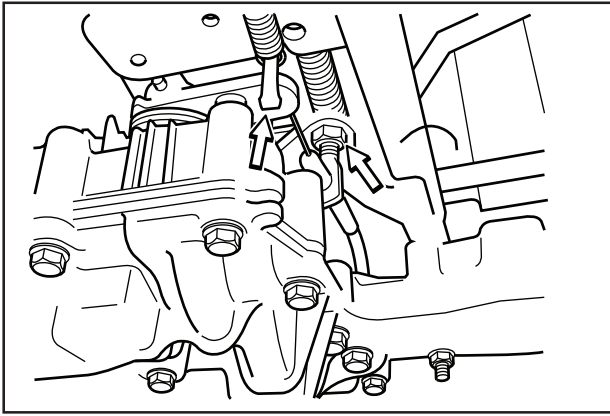


- Release the tensioning wheel spring (1).
- Release the clutch, gear and brake wire (2, 3 and 4) and remove the wires' holder plates (5 and 6).

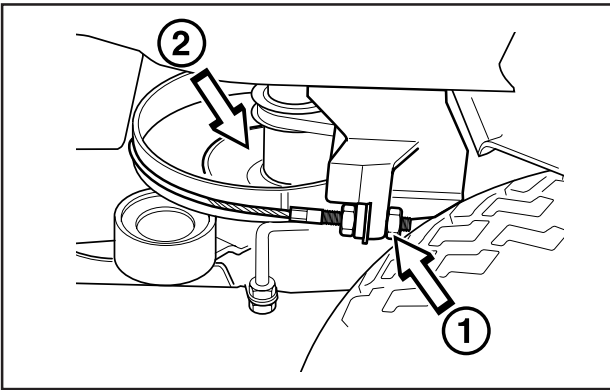
2 Rider 13 and Rider 16



- Release the tensioning wheel spring (1).
- Release the hydrostatic transmission wire (2) from the arm (3) and the casing from the holder (4).
- Release the cable from the neutral position contact (5).
- Release the brake wire from the arm under the tank and the casing's holder from the rear frame (6).



3

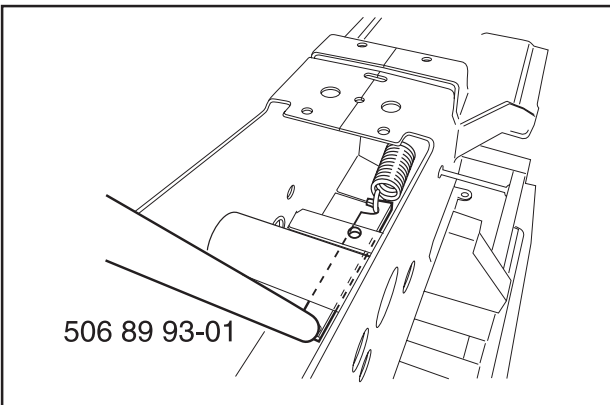


- Work off the belts from the pulley (2).
- Loosen the steering wires (1) and remove the steering rim.
- Remove the pulley (2). Move the lower part forwards, the upper part backwards and detach the pulley.

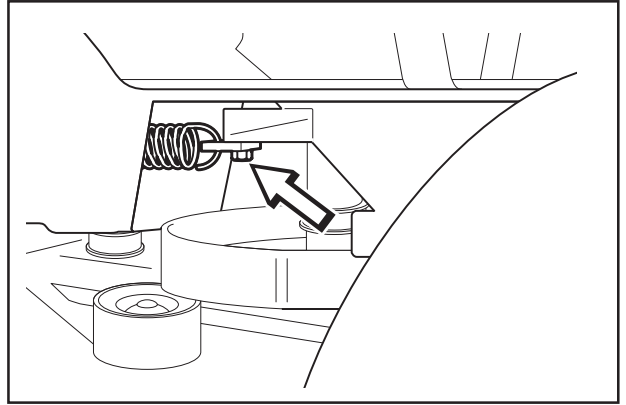
4



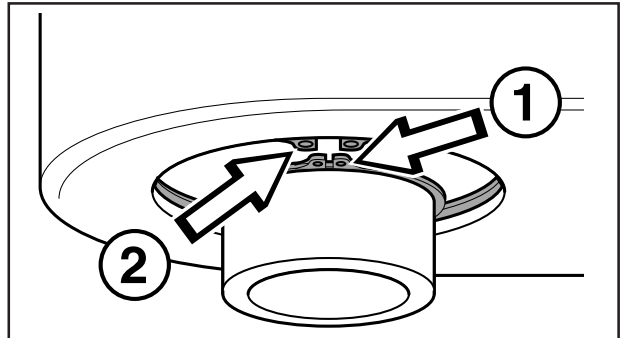
WARNING!
The articulation spring is strongly tensioned and can cause injury if it flies off. Wear safety glasses and gloves when removing/attaching the spring.



Detach the articulation spring. This spring is heavily tensioned and should be offloaded using tool 506 89 93-01 before the bolt for the rear bracket is removed.

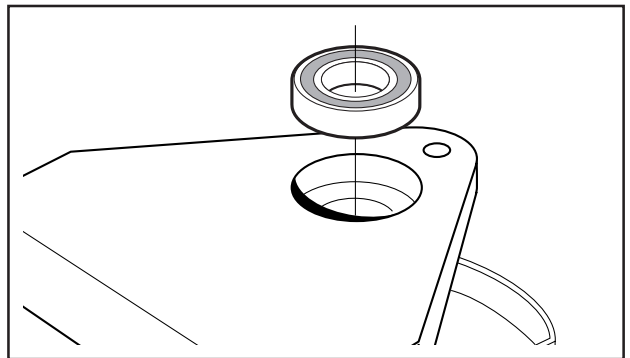


5



Remove the inner circlip (1) from the lower bearing (see diagram). The rear section is now loose and can be moved. Then detach the outer circlip (2) and take the bearing out downwards.

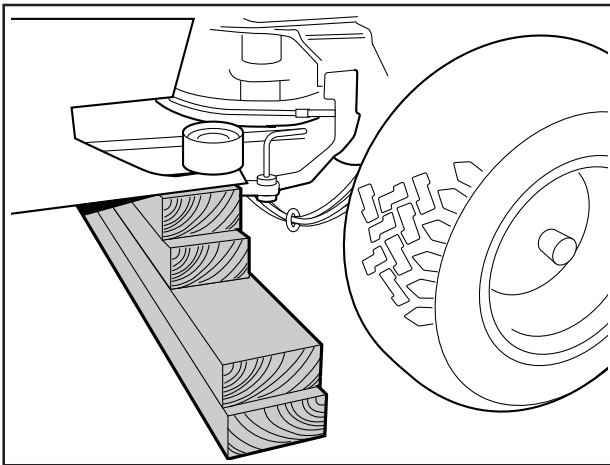
6



- Take the upper bearing out upwards, if it does not come out easily, it should be knocked out from below.
- Insert the new bearings and assemble the articulated steering in the reverse removal order.
- After re-assembly, the wire tension should be checked (see "Checking and adjusting steering wires"). Also check that the controls and wires are correctly adjusted.
- Check the setting of the neutral position switch on machines with hydrostatic transmission, see "Electrical system\Microswitch neutral position".

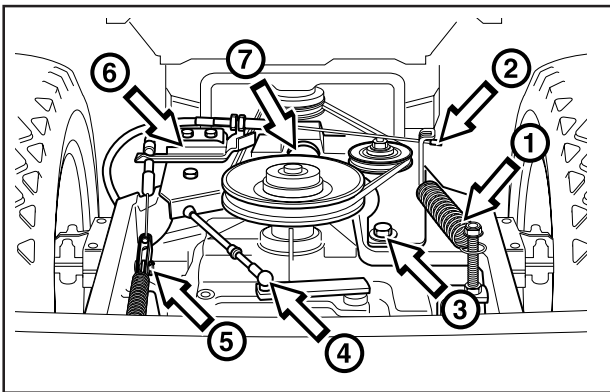
Removal of swing axle

1



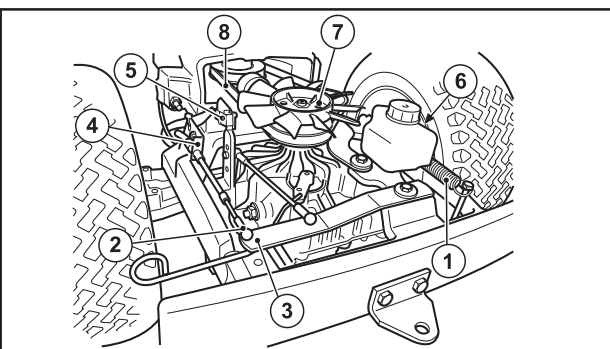
- Block-up the machine in front of the rear frame.
- Remove the transmission/gear box cover.

2 Rider 11



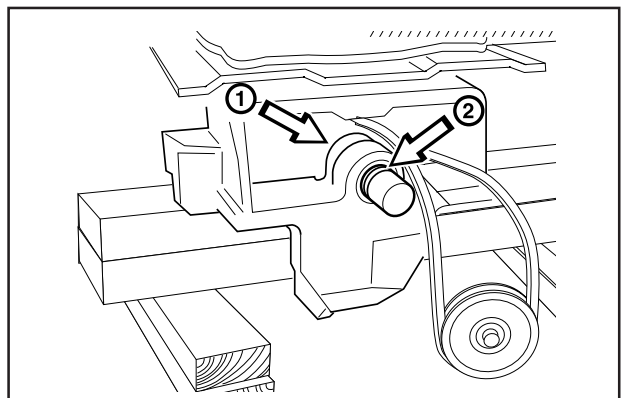
- Detach the tensioning wheel spring (1) and the clutch wire (2).
- Disconnect the tensioning wheel arm (3) from the rear frame, and detach the belt from the gear box pulley.
- Detach the gear and brake wires (4 and 5) and remove the wires' holding plates (6).
- Remove the circlip and washer from the swing axel (7) and pull the rear frame out backwards.

2 Rider 13 and 16



- Release the tensioning wheel spring (1).
- Release the hydrostatic transmission wire (2) from the arm (3) and the casing from the holder (4).
- Release the cable from the neutral position contact (5).
- Release the brake wire from the arm under the tank and the casing's holder from the rear frame (6).
- Remove the circlip and lift off the hydrostatic transmission's fan (7).
- Remove the rear belt (8).
- Remove the circlip and washer from the swing axle and pull the rear frame backwards.

3



Remove the circlip and washer from the swing axle's inner holder (1) and pull the swing axle out backwards. Use a sledgehammer or puller if needed.

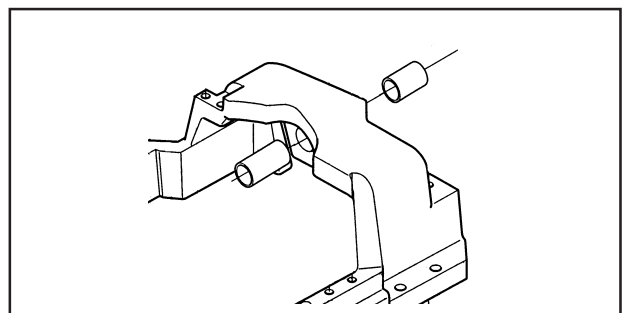
If the dust protection (2) is damaged, this should be replaced by a new one.

Replacing bushings

Once the swing axle has been removed the bushings fitted to the rear frame must be replaced. Dismantling is carried out using a standard drift, see "Special tools".

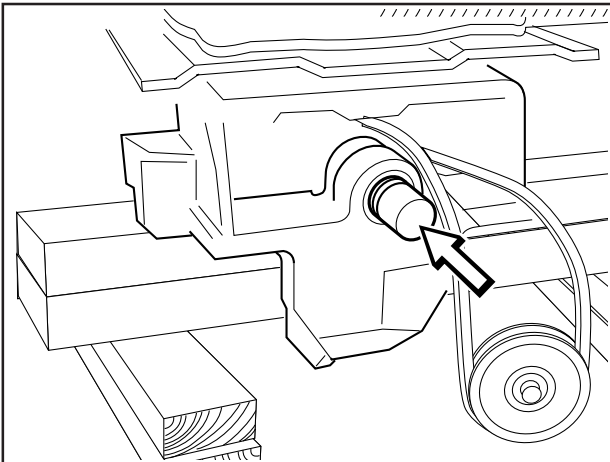
Assembling new bushings is carried out using a drift, see "Special tools". Ensure the grooves in the bushings run horizontally. It is important that the outer edge of the outermost bushing is flush with the outer edge of the hole.

Lubricate the bushings with a lithium-based grease.



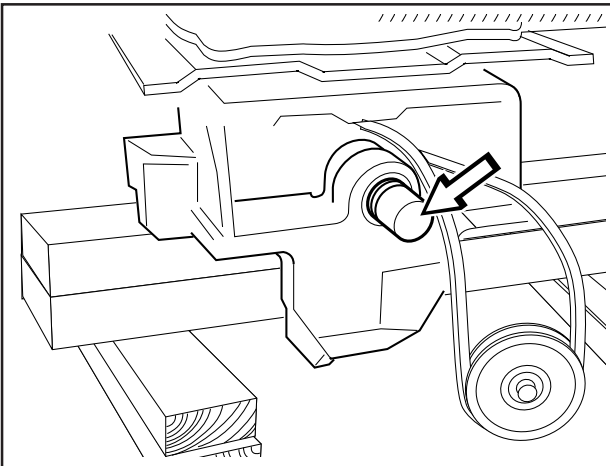
Installation of swing axle

1



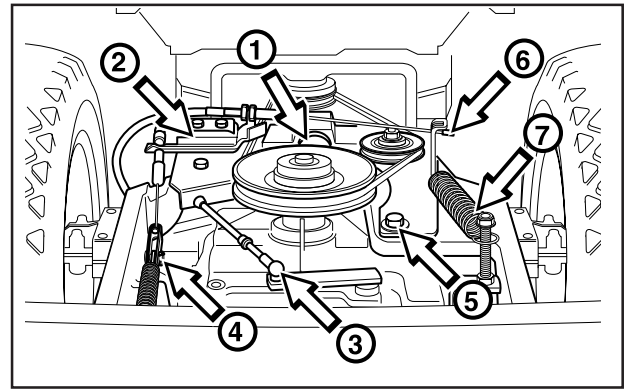
- Grease half of the axle (the half that has not been turned down) and press it from the back into the steering spindle (see diagram).
- Attach the washer and circlip on the swing axle's inner holder.
- Fix the dust guard (with a thin lip behind) approx. 2/3 of the way in on the axle and lubricate the axle on both sides of the dust guard.

2



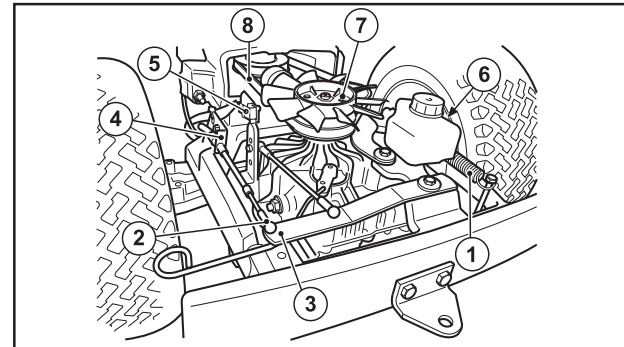
Roll the rear frame forwards and press it in on the swing axle.

3 Rider 11



- Attach a washer and circlip onto the swing axle (1).
- Firmly secure the wires' holder plates (2), as well as the gear and brake wires (3 and 4).
- Connect the belt onto the pulley and tightly screw the tensioning wheel arm (5) onto the rear frame.
- Attach the clutch wire (6) and the tensioning wheel spring (7).

3 Rider 13 and 16



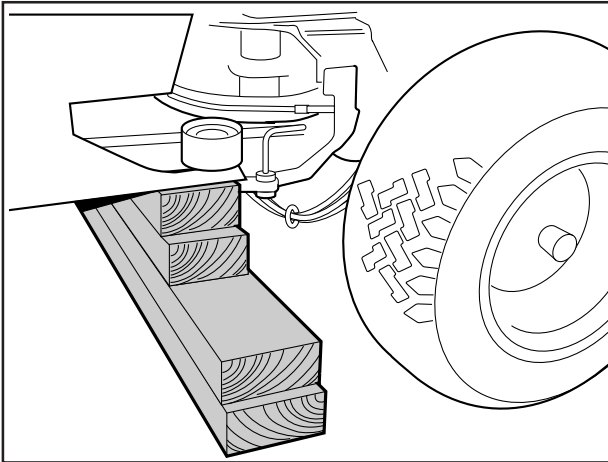
- Fit the washer and circlip on the swing axle.
 - Fit the hydrostatic transmission wire and its casing (2+4).
 - Fit the cable on the neutral position contact (5).
 - Fit the rear belt (8).
 - Fit the brake wire on the arm under the tank and the casing's holder on the rear frame (6).
 - Fit the tensioning wheel spring (1).
 - Fit the hydrostatic transmission's fan and the circlip (7).
- 4 . Check that wires and controls are correctly adjusted (see Inspection and adjusting of respective wires). Finally, fit the cover on the transmission/gearbox.

Check the setting of the neutral position switch on machines with hydrostatic transmission, see "Electrical system\Microswitch neutral position".

Removal/installation of gear box

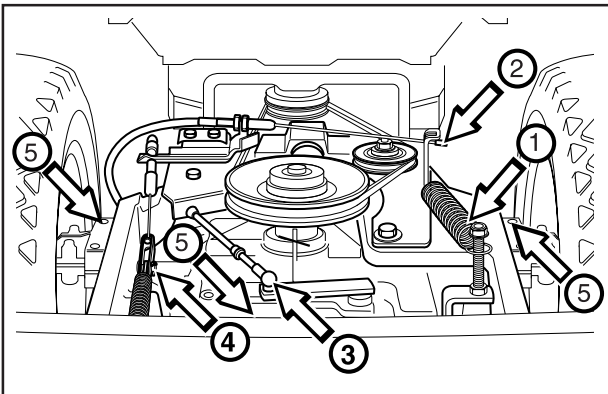
Rider 11

1



- Block-up the machine in front of the rear frame and dismantle the rear wheels.
- Remove the cover from over the gear box.

2



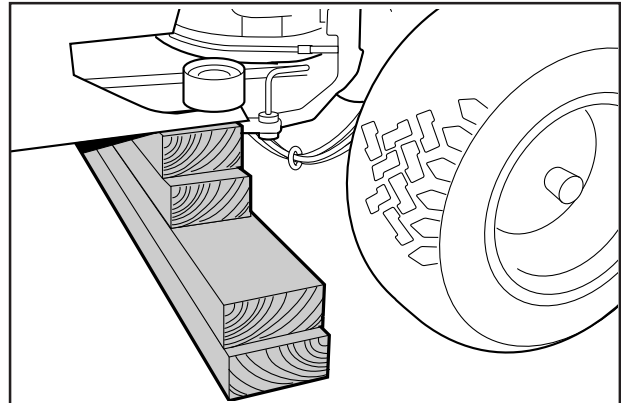
- Release the tensioning wheel spring (1).
- Unfasten the clutch wire (2), and detach the belt from the gear box pulley.
- Detach the gear and brake wires (3 and 4).
- Insert a garage jack under the gear box and unscrew the gear box's five holder screws (5).

3

- Lower the garage jack and pull out the gear box.
- Installation of the gear box is carried out in the reverse removing gear box order
- After installation, check that the clutch, brake and gear wires are correctly adjusted (see "Checking and adjusting brake wire", "Checking and adjusting gear control" and "Checking and adjusting freewheel clutch").

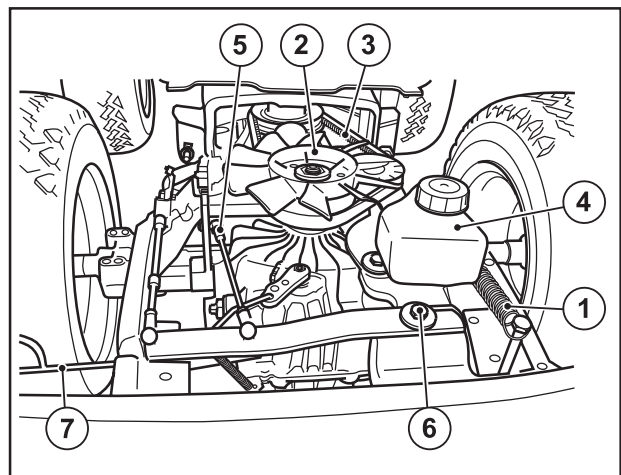
Removing/installation of hydrostatic transmission Rider 13 H/13 H Bio and Rider 16 H

1



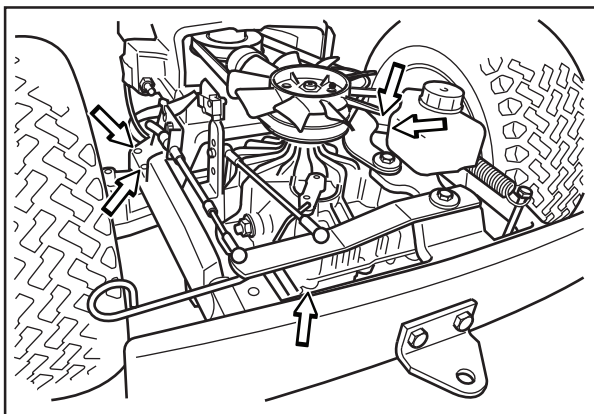
- Block-up the machine in front of the rear frame and remove the back wheels.
- Remove the transmission cover.

2



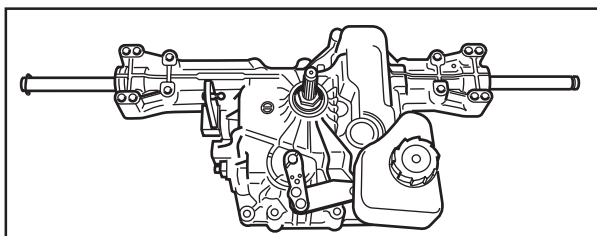
- Release the tensioning wheel spring (1).
- Remove the fan (2), it is held by a circlip.
- Work off the drive belt (3).
- Remove the oil tank (4).
- Release the brake wire spring and remove the brake wire from the brake lever (concealed under the oil tank).
- Release the hydrostatic transmission link (5) in the front ball joint.
- Remove the screw (6) holding the arm.
- Remove the freewheel clutch control (7) with its spring.

3



Insert a garage jack under the hydrostatic transmission and loosen its five holder screws.

4



- Lower the garage jack and pull out the hydrostatic transmission.
- Installation of the hydrostatic transmission is carried out in the reverse hydrostatic transmission removing order
- After fitting the brake wire and hydrostatic transmission wires, check that they are correctly adjusted (see "Inspection and adjustment of brake wire" and "Inspection and adjustment of speed control"). Check also the oil level in the hydrostatic transmission, and top up if necessary. Check the setting of the neutral position switch on machines with hydrostatic transmission, see "Electrical system\Microswitch neutral position".

Replacing hydrostatic transmission axle sealing collars

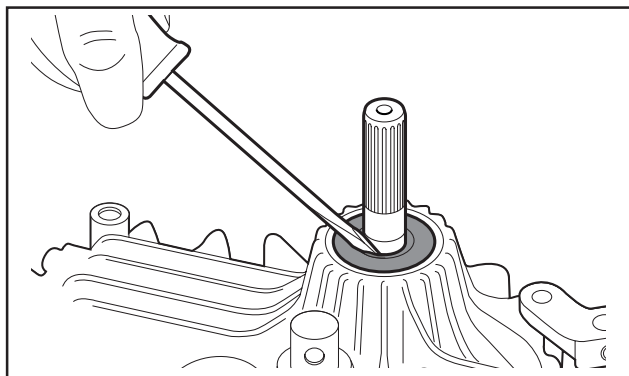
Sealing collar replacement - input axle

Remove the cooling fan, it is held by a circlip. Remove the pulley from the input axle by pulling it upwards and then removing the circlip under the pulley.

IMPORTANT INFORMATION

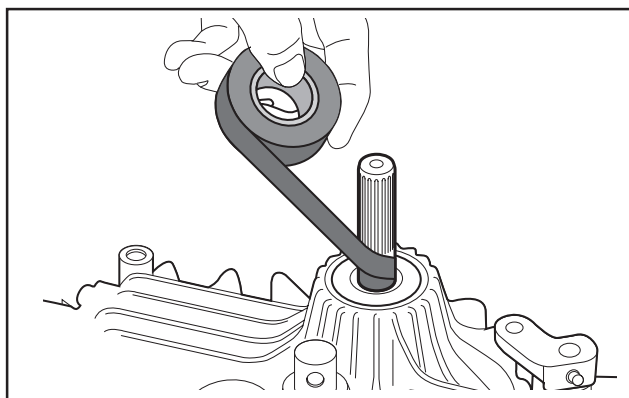
The area around the sealing collar must be absolutely clean! If the hydrostatic oil is contaminated with dirt, this can lead to a shorter hydrostatic transmission operational life.

1



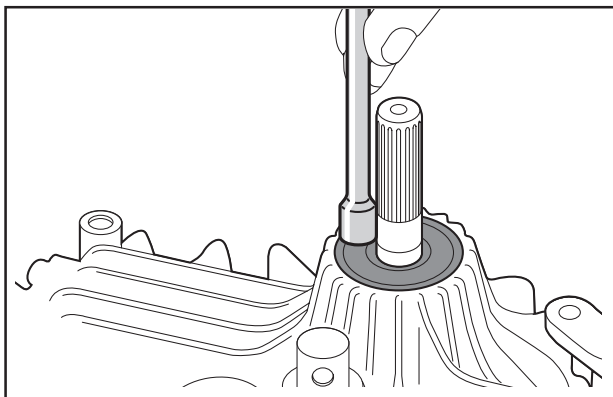
- Clean the input axle and the area around the sealing collar of all dirt and rust.
- Insert a screwdriver between the sealing collar and the axle and bend the sealing collar out of the axle housing with a twisting motion.

2



- Wrap insulation tape around the input axle to protect the new sealing collar from damage to splines and grooves. Start by wrapping from the bottom and continue upwards over the axle until the entire axle is wrapped in tape.
- Lubricate the axle and the inside of the new sealing collar with grease so that the collar can slide easily.

3



- Place the sealing collar on the axle with the smooth side upwards, and *carefully* press it downwards.
- Use the thick end of a 1/4" extender to *carefully* knock down the sealing collar until the upside of the collar is level with the axle housing's upper edge.
Move the extender in a circle around the sealing collar so that it is evenly pressed down, all the way around.
- Remove the insulation tape from the axle and assemble the lower circlip and the pulley with the hexagonal hub facing upwards.
- Fasten the fan and the washer and assemble the upper circlip.
- Install the hydrostatic transmission in the ride-on mower as indicated in the previous description (see "Removal/installation of hydrostatic transmission").

Sealing collar replacement - outgoing axles

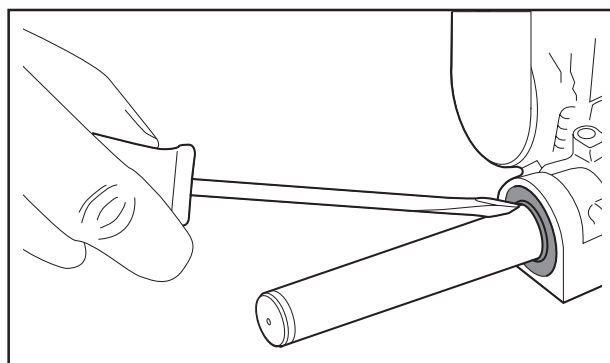
1

Remove the rear wheels. Remove the circlips and pull the wheels outwards. Do not mislay the key that sits between the hub and axle. Use removing tool 506 57 00-01 if necessary.

Remove the spacing sleeve and washer from the wheel axle.

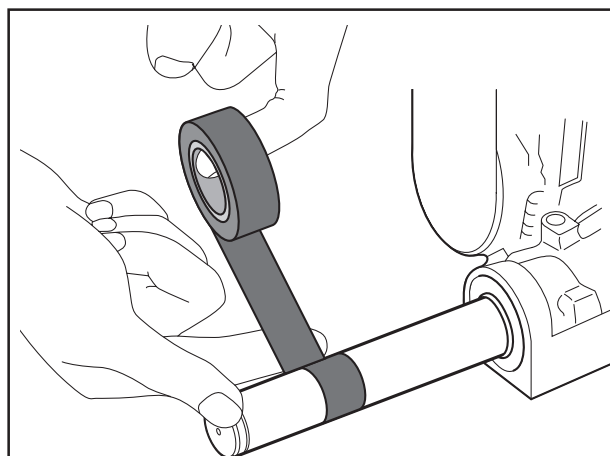
IMPORTANT INFORMATION

Dirt must not be allowed to get into the transmission as this can shorten its operational life.



- Clean the outgoing axle and the area around the sealing collar of all dirt and rust.
- Insert a screwdriver between the sealing collar and the axle and bend the sealing collar out of the axle housing with a twisting motion.

2

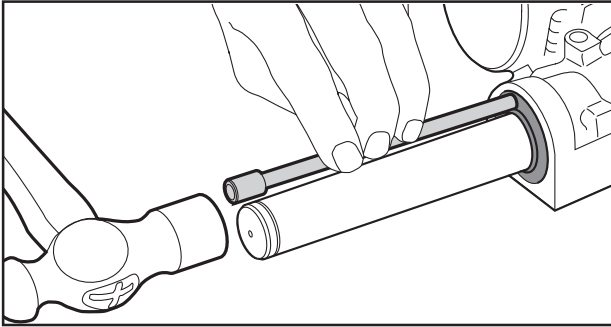


- Wrap insulation tape around the outgoing axle from the start of the key-way and outwards until even the circlip's groove is covered with tape. This is done to protect the new sealing collar from damage.
- Lubricate the axle and the inside of the new sealing collar with grease so that the collar can slide easily.

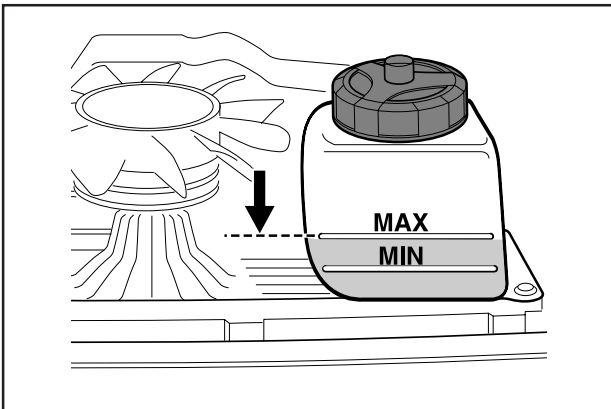
IMPORTANT INFORMATION

Before the sealing collar is completely installed, check that the sealing collar's metal spring reinforcement sits on the side of the sealing collar which leads inwards towards the transmission.

3



- Place the sealing collar on the axle, with the metal spring inwards, and press it in *carefully*.
- Use the narrow end of a 1/4" extender to *carefully* knock in the sealing collar until it reaches the bottom of the axle housing. Only knock on the steel cover. Move the extender in a circle around the sealing collar so that it is pressed in evenly all the way around and tight against the axle.
- Remove the insulation tape from the axle and repeat, as is necessary, the entire procedure for the second axle.
- Replace the washer, spacing sleeve, key and rear wheel on the axle. Fit the circlip that holds the wheel and the plastic cover over the axle end.

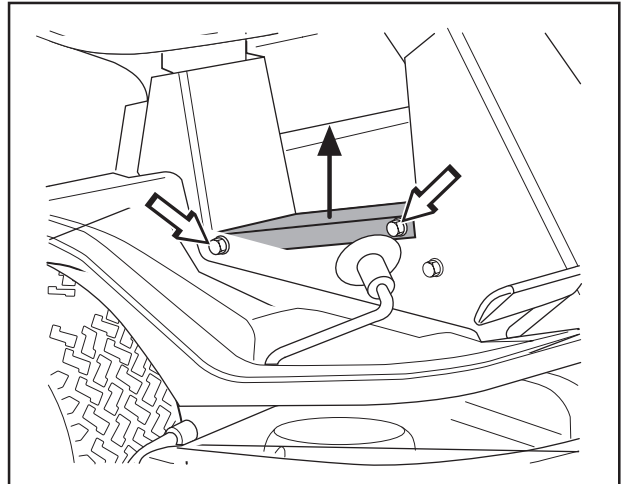


- Fill the transmission's oil container with SAE 10W30 oil until the oil level reaches the "MAX"-marking.
- Bleed the transmission as directed in "Bleeding of the hydrostatic transmission's oil system".
- Operate the ride-on mower and then check that there is no oil leaking from the new axle sealing collars.
- Check the oil level and top up if necessary after test running.

Replacing hydrostatic transmission wire

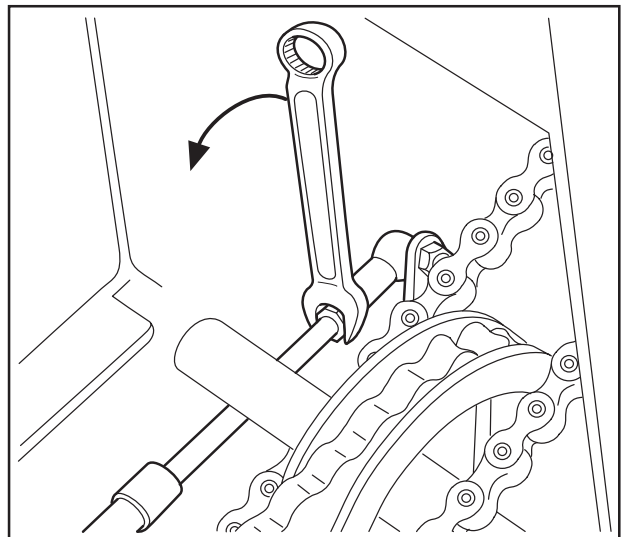
Removal of hydrostatic transmission wire

1



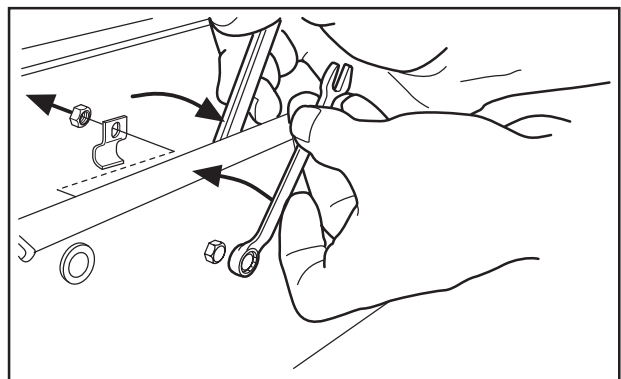
Remove the frame plate by undoing the screws (two on each side).

2



Loosen the hydrostatic transmission's front lock nut a 1/4 turn and remove the lock spring.

3

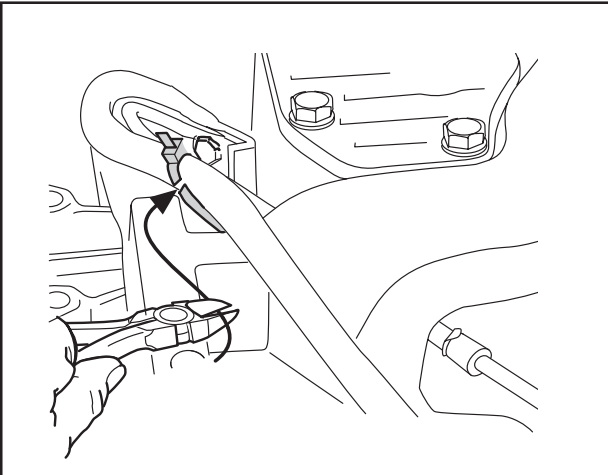


Remove the hydrostatic transmission wire's front clamp fixed inside the middle bracket.

4. Remove the transmission cover.

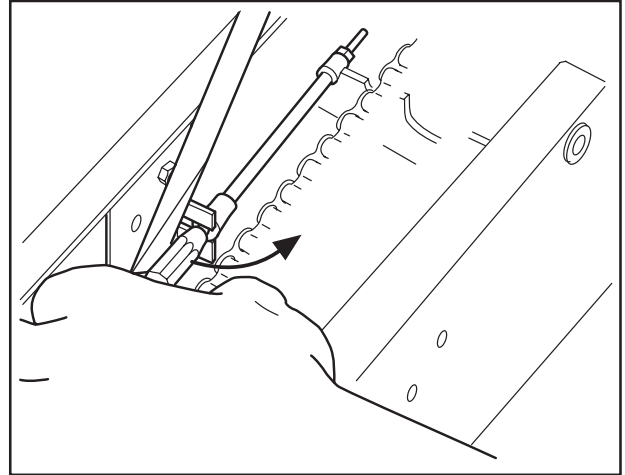
7. Lift off the linkage and pull out the wire.

5



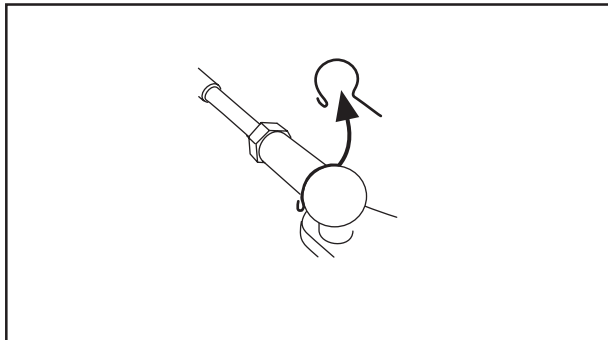
Follow the hydrostatic transmission wire backwards towards the transmission and cut off the cable ties round the wire.

8



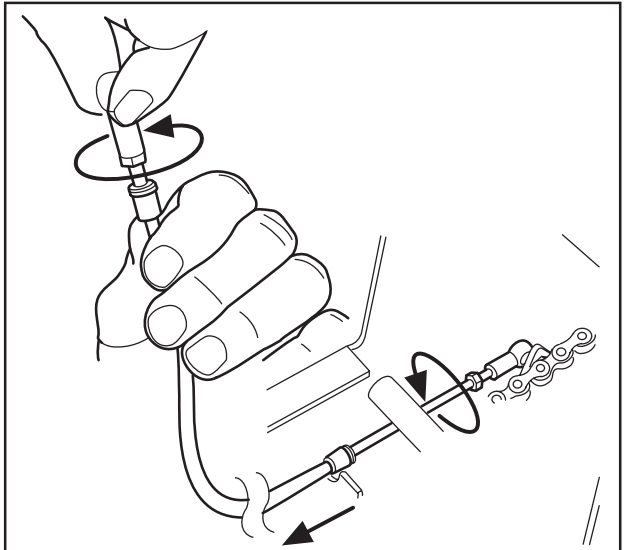
Lift out the transmission wire with the linkage attached.

6

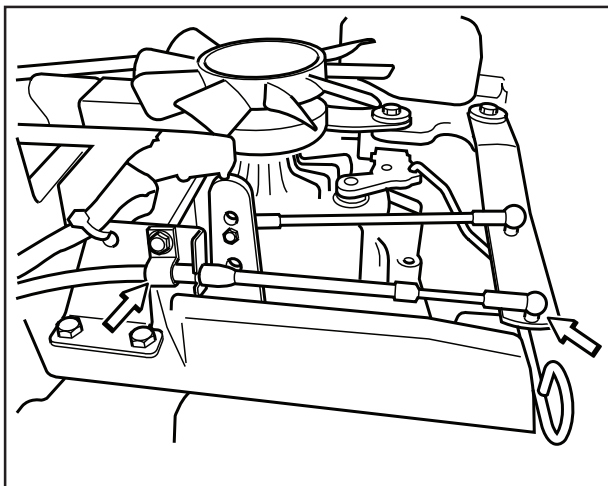


Remove the lock spring at the transmission wire's rear linkage. Release the clamp holding the wire's casing.

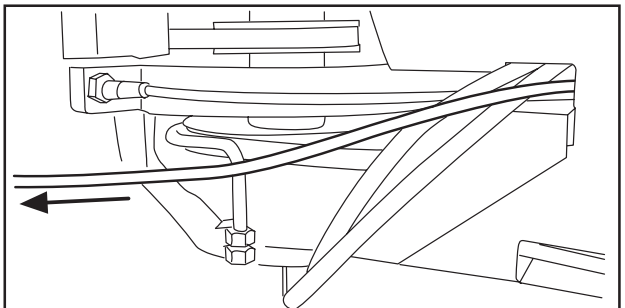
9



Unscrew both ball joints from the hydrostatic transmission wire.



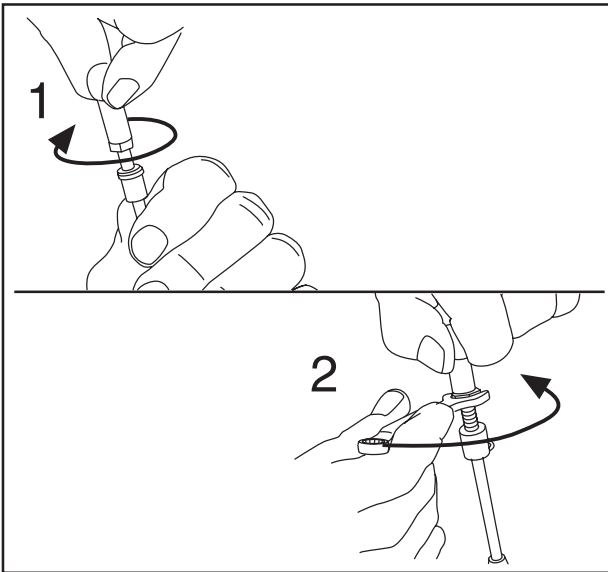
10



Remove the entire hydrostatic transmission wire.

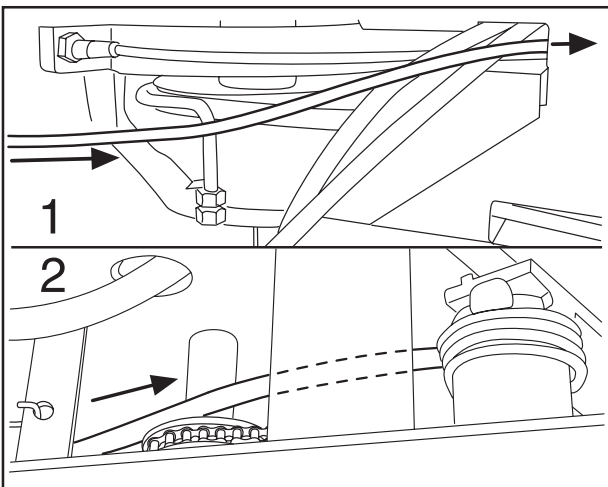
Refitting hydrostatic transmission wire

1



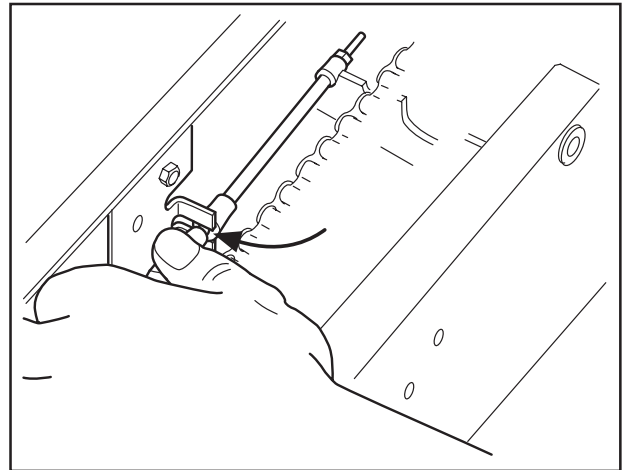
Screw the front ball joint onto the new transmission wire and tighten the lock nut.

2



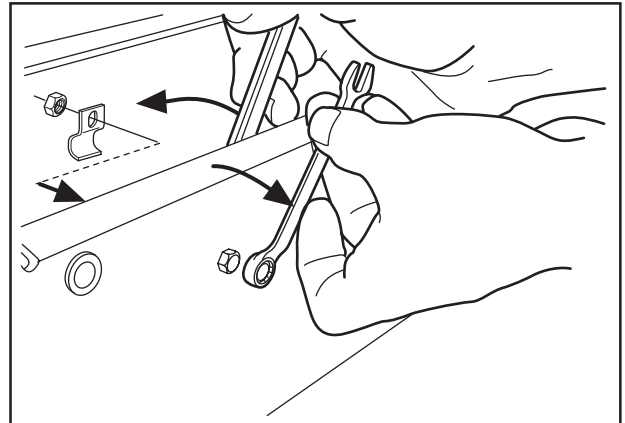
Run the wire through the mower so that it follows the same route as the old wire.

3



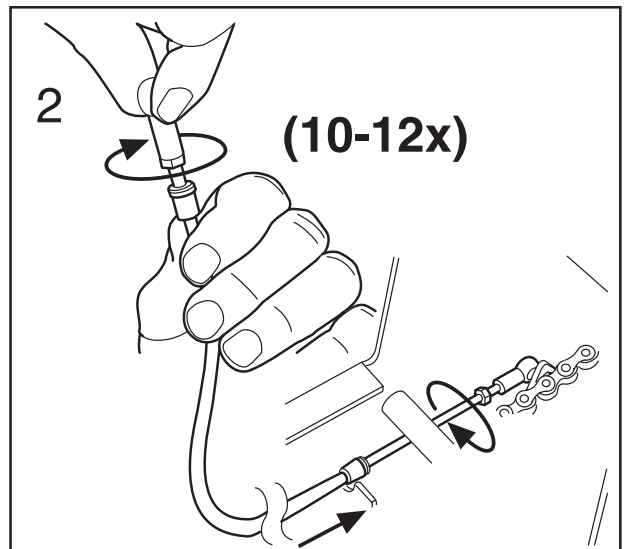
Press the wire casing in the front holder in the middle bracket.

4



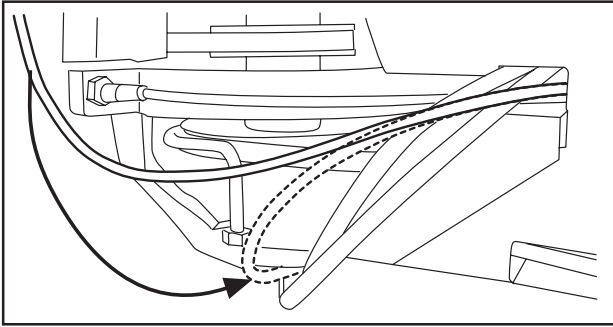
Screw tight the hydrostatic transmission wire's clamp. Press the linkage in its holder and fit the lock spring.

5



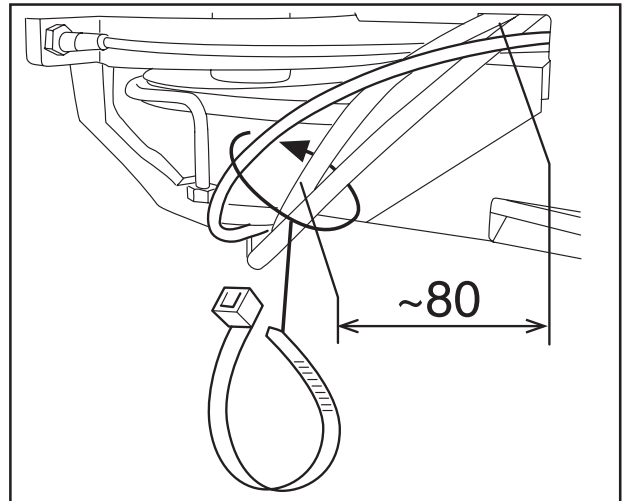
Screw tight the linkage on the lower part of the transmission wire. Screw 10-12 turns so that the linkage has the correct length.

6



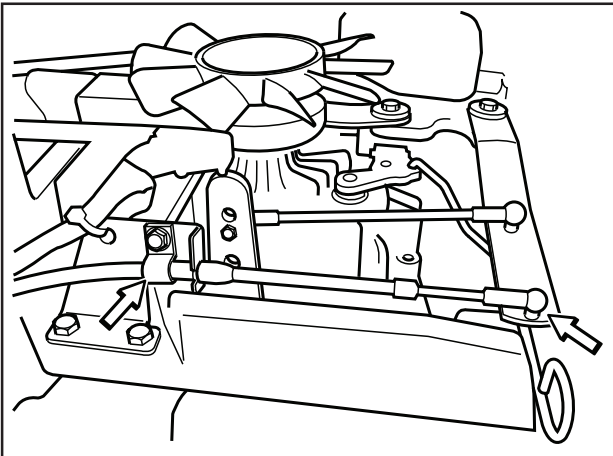
Draw the transmission wire along with the other cabling. Place the wire at the bottom in the clamp, under the articulated steering's bearing.

10



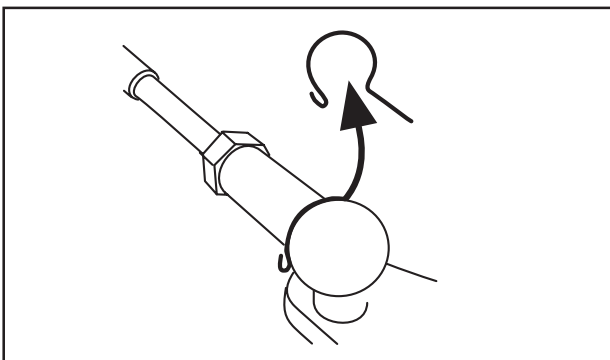
Fix the hydrostatic transmission wire with a cable ties.

7



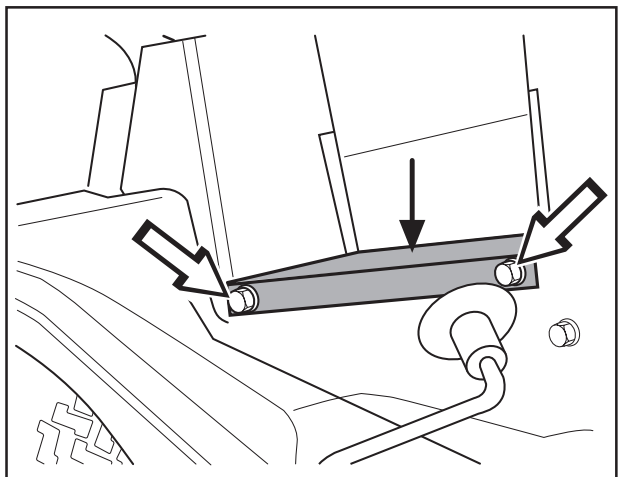
Put the wire in position and screw tight the casing with the rear clamp.

8. Adjust the wire as directed in "Inspection and adjustment of speed regulator". Connect the rear linkage and fit the lock spring. Tighten the rear lock nut for the linkage.



9. Check the setting of the neutral position contact. See "Electrical system\Microswitch neutral position".

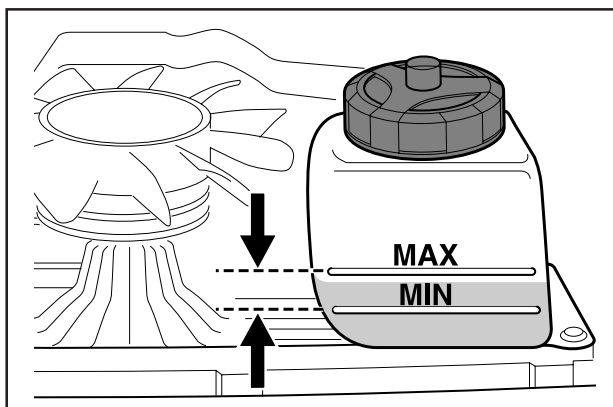
11



Refit the frame plate using the four screws.

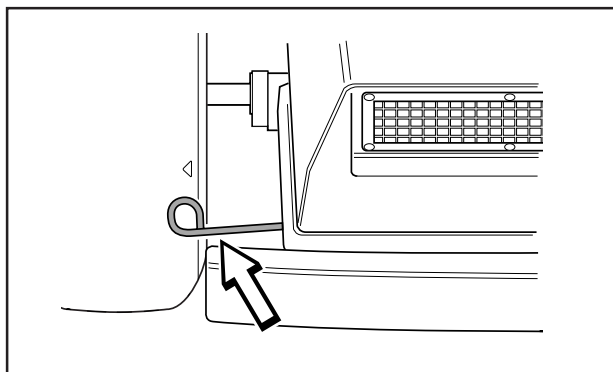
Bleeding the hydrostatic transmission oil system

1



- Check the hydrostatic transmission oil level.
- Start the engine and set the throttle control to idle.

2



- Repeat opening and closing the disengaged clutch control whilst the front respective rear pedals are alternately pressed down.
- When the mower starts to move set the governor control lever to high idle.

3. Repeat quick starts and emergency stops until the transmission responds as it should.

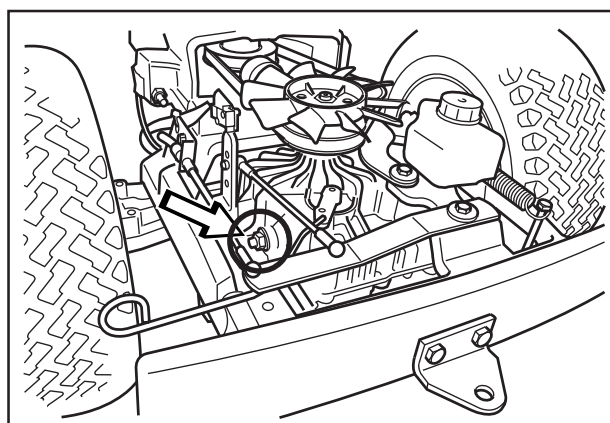
- Check also the oil level in the hydrostatic transmission, and top up if necessary.

4. Check and top up with oil if necessary after test driving.

Adjustment of transmission neutral position

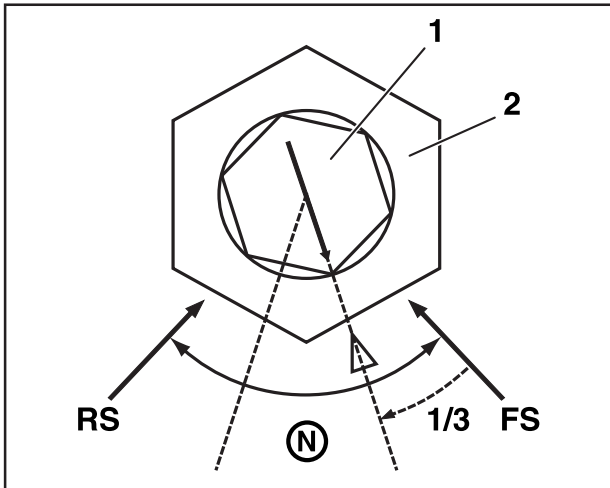
1. Bleed the hydrostatic transmission oil system.
2. Lift the back of the ride-on mower up so that the wheels are off the ground and place blocks under the machine.

3



- The neutral position is adjusted by turning the hexagonal axle on the transmission (see diagram).
- Start the engine and set the throttle control to full throttle.
- Unscrew the hexagonal axle lock nut and turn the axle clockwise until the drive shafts start to rotate backwards.
- Make a mark on the top of the axle.

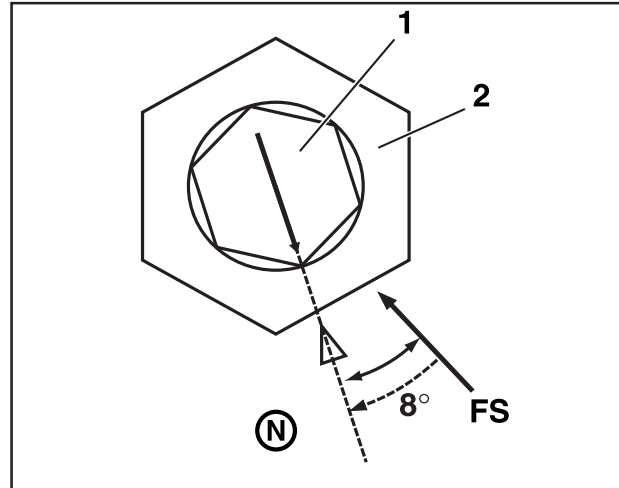
4



1 = Axle
2 = Lock nut

- Slowly turn the axle anti-clockwise until the drive shafts stop rotating backwards and make a mark on the transmission housing (RS).
- Slowly turn the axle anti-clockwise until the drive shafts start to rotate forwards.
- Slowly turn the axle clockwise until the drive shafts stop rotating forwards and make a mark on the transmission housing (FS).
- Turn the axle clockwise 1/3 of the distance between the marked stop points.
- Hold the axle (N=8) firmly and tighten the lock nut (N=17).
- Check that the drive shafts do not rotate in the neutral position by slowly transferring the steering arm to the neutral position from the forwards and reverse positions.

5



1 = Axle
2 = Lock nut

- If the drive shafts do not rotate backwards despite the hexagonal axle having rotated a full turn, the neutral position is to be adjusted in the following way:
- Slowly turn the axle anti-clockwise until the drive shafts start to rotate forwards.
 - Slowly turn the axle clockwise until the drive shafts stop rotating forwards and make a mark on the transmission housing (FS) and the axle.
 - Turn the axle clockwise 8° from the mark on the transmission housing.
 - Hold the axle (N=8) firmly and tighten the lock nut (N=17).

Transmission maintenance

Oil change

Most garden owners do not have tools for or experience of changing transmission oil. The transmission probably has a longer operational life than other ride-on mower components, this makes transmission oil changes less important for most customers. However, the transmission's operational life is increased if oil changes are made.

If the ride-on mower is used *professionally*, it is recommended to change the oil firstly after 50 hours use and every 300 hours use thereafter.

The transmission K 46 has a capacity for 2.2 litres/ 2,35 USqt (SAE10W/30 engine oil, grade SF-CC).

The oil does not need changing in a manual gearbox.

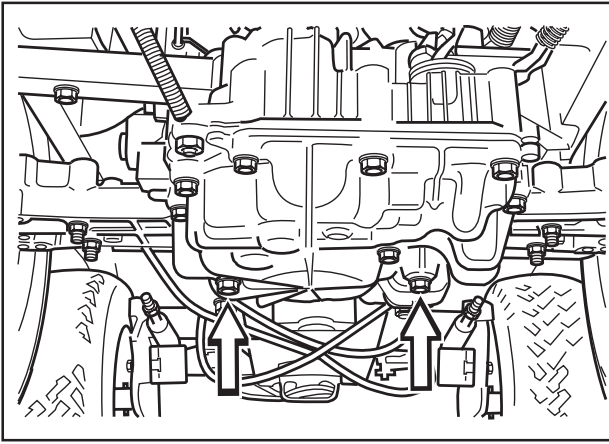
Changing oil – Rider 13 and Rider 16

Empty the hydrostatic transmission with the two plugs, width across flats 14 mm. The other screws have smaller widths.

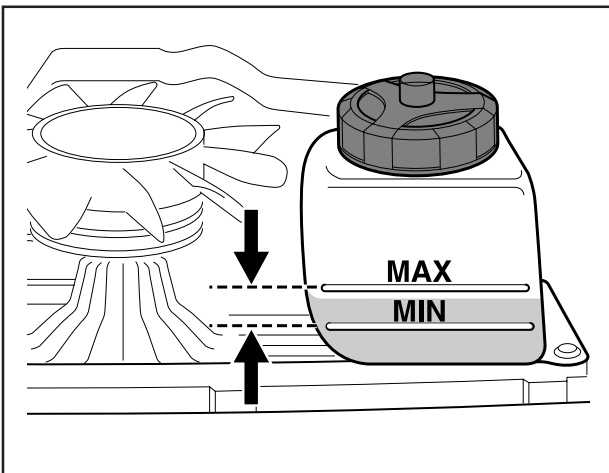
IMPORTANT INFORMATION

Spent engine oil is hazardous to health and must not be poured out on the ground or in the nature, but should be handed in to a designated place for recycling.

Avoid skin contact and wash any spillage with soap and water.



Fill up with oil in the oil tank.



Bleed the transmission as directed in "Bleeding of the hydrostatic transmission's oil system". Top up with oil after bleeding.

Test run the machine and recheck the oil level.

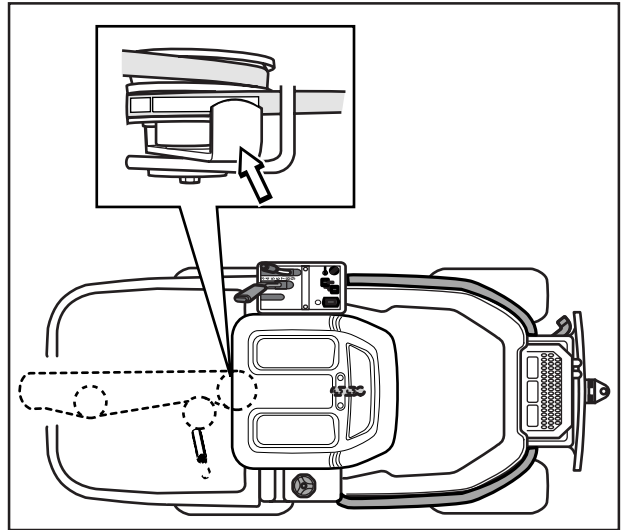
Removing the belt

Rider 11, Rider 13 H, Rider 16 H och Rider 14 Pro

Starting point when Removing the belt:

- A deck is not mounted on the machine.
- The front part of the belt hangs loose.

The complete belt is removed as follows only if a snow blade is to be fitted on the machine.

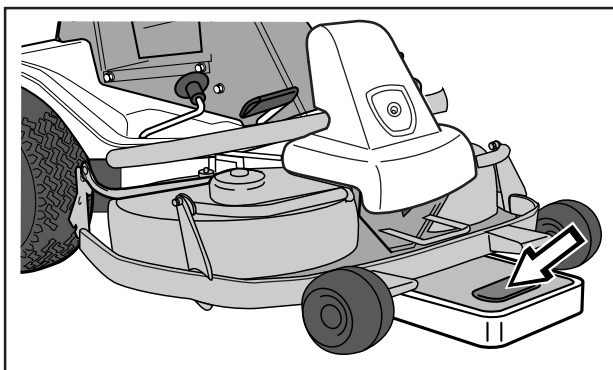


1. Loosen the belt guide and support pulley.
2. Loosen the belt tensioning pulley.
3. Prise the belt off the middle pulley and remove the belt.

Reverse the above sequence to refit the belt.

Checking and adjusting mower deck ground pressure

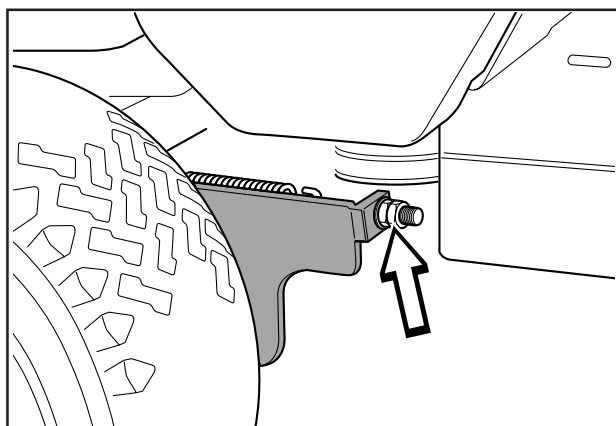
1



Check the tyre pressures (60 kPa/8,5 PSI).

Place a set of bathroom scales under the mower deck's frame (front edge) so that the deck rests on the scales.

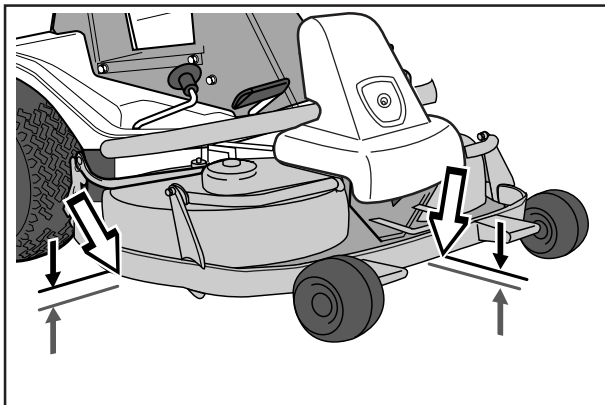
2



Adjust the mowing deck's ground pressure with the adjuster nuts placed behind the front wheels on both sides of the ride-on mower. The ground pressure should be between 12 and 15 kg/26.5-33 lbs and the springs tensioned equally.

Checking and adjusting mower deck parallelism

1

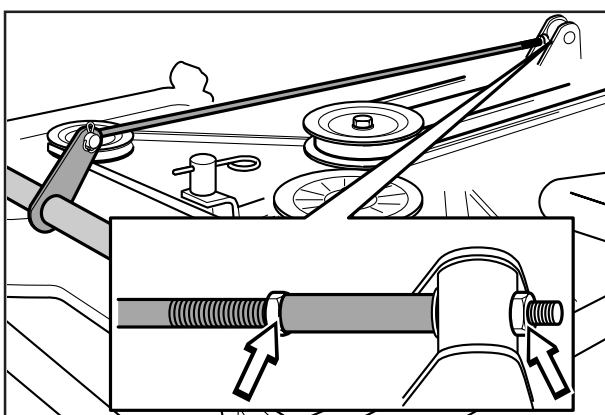


Check the tyre pressures (60 kPa/8,5 PSI).

Place the ride-on mower on an even surface and measure the distance between the ground and the edge of the deck, at the front and rear of the cover. The cutting unit should slope forwards slightly so that the rear edge is 2-4 mm (1/8") higher than the front edge.

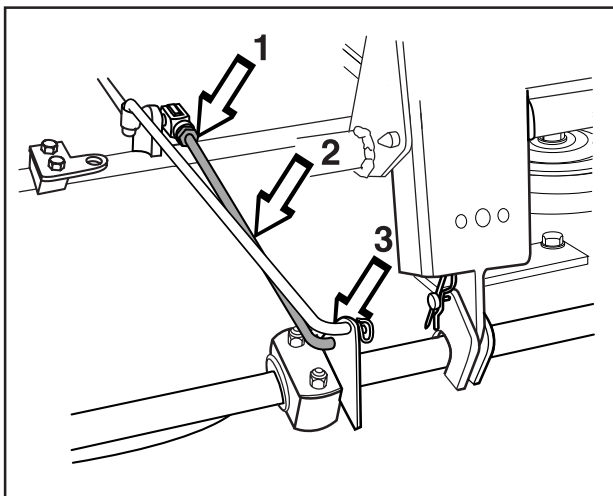
2

Adjusting Rider 11 and Rider 13 H



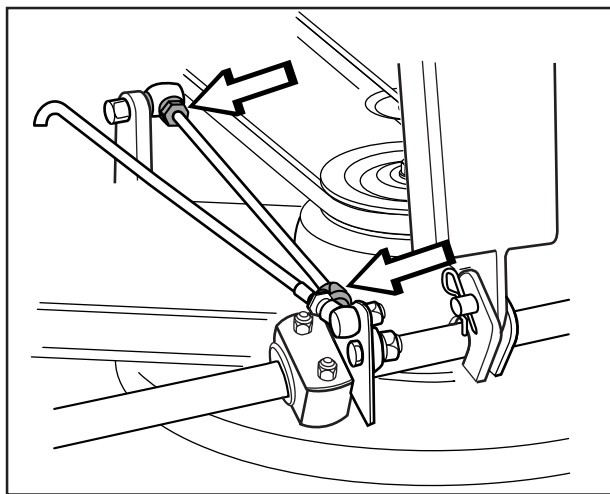
- Remove the front cover and the right-hand fender.
- Vertical adjustment of the mowing deck is made with the adjuster nuts on the back edge of the lift-strut.
- Raise the mowing deck at the front edge by shortening the lift-strut. Lower the mowing deck at the front edge by lengthening the lift-strut.
- Tighten the nuts against each other after the adjustment.
- On completion of the adjustment, the deck's parallelism should be re-checked.
- Fit the right-hand fender and the front cover.

2 Adjusting Rider 11 Bio and Rider 13 Bio



- Remove the front cover and the right-hand fender.
- Unscrew the nut (1) on the parallel strut. Remove the locking clips (3) and the parallel strut (2).
- Turn the fork anticlockwise to raise the cover's rear edge, clockwise to lower the cover's rear edge.
- Once adjustment is complete, refit the parallel strut and clip and tighten the nut.
- Recheck the alignment of the cutting unit after adjustment.
- Refit the right-hand fender and hood.

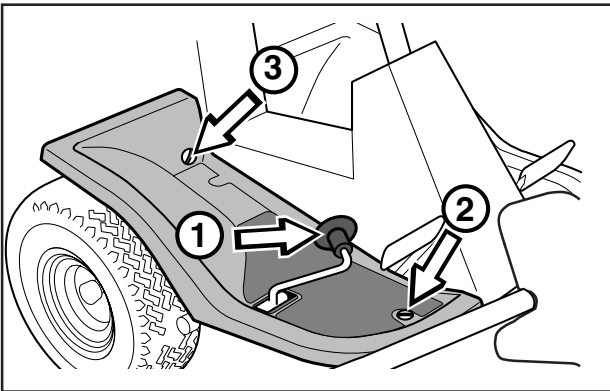
2 Adjusting Rider 16



- Remove the front cover and the right-hand fender.
- Loosen the nuts on the parallel strut.
- Screw in (shorten) the strut to lower the rear edge of the cover. Screw out (extend) the strut to raise the rear edge of the cover.
- Tighten the nuts after adjustment.
- On completion of the adjustment the unit's parallelism should be re-checked.
- Fit the right-hand fender and the front hood.

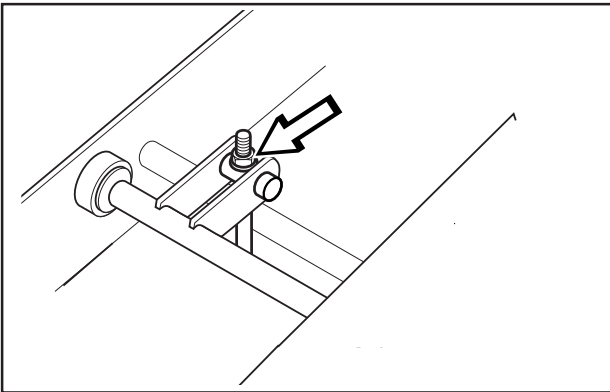
Adjusting cutting height area

1



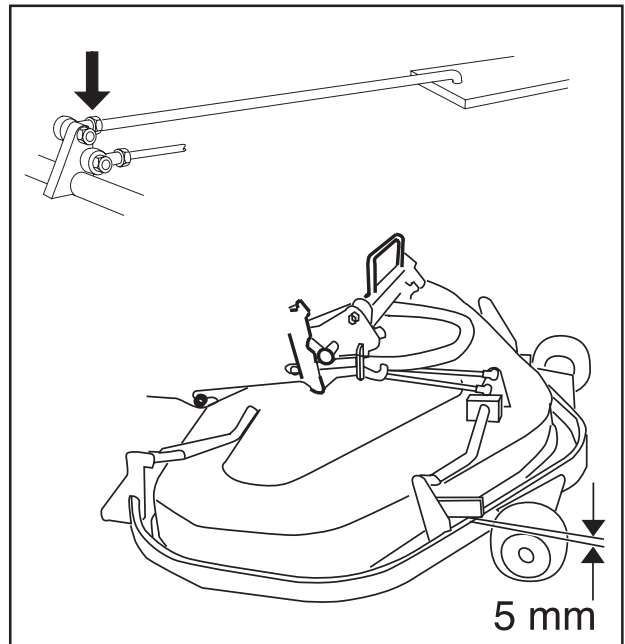
Remove the right-hand fender.

2



Raise or lower the entire mowing deck by screwing the nuts up or down.
If the highest cutting height is raised by 5 mm (3/16") the other fixed cutting heights will also be raised by the same amount.

Adjusting cutting height



- Loosen the nuts on the height setting arm.
- Adjust so that the distance between the stop for the lowest height setting and the protective frame is 5 mm (3/16").
- Tighten the nuts.
- Check that the parallelism has not changed. If it has changed, the parallelism must be readjusted again.
- Check and adjust the cutting unit's ground pressure as set out (see "Checking and adjusting cutting unit ground pressure") if necessary.
- Fit the nose.

IMPORTANT INFORMATION

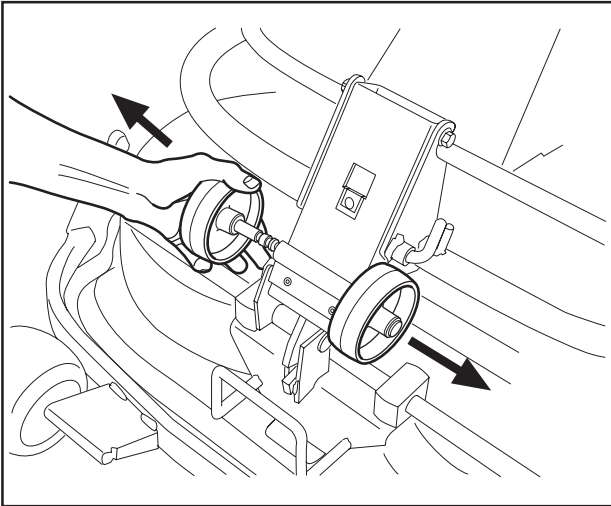
The parallelism and height must be adjusted again when changing the cutting unit.

Removing the cutting unit

BioClip and Combi unit

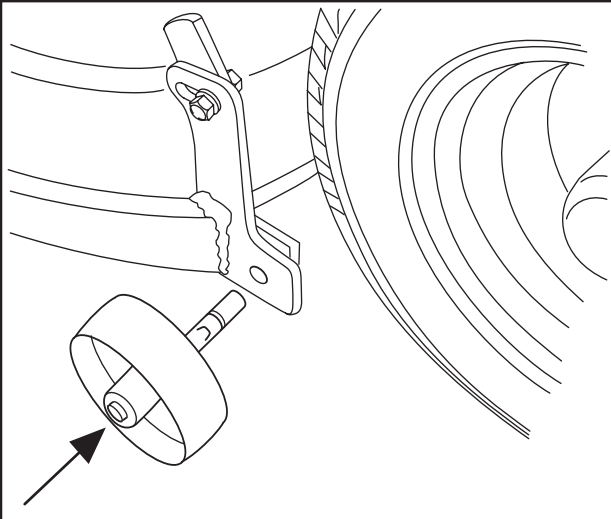
1. Apply the parking brake.
 - Adjust the cutting height to its lowest setting.
 - Remove the front cover.

2



Release the two support wheels under the front cover.

3

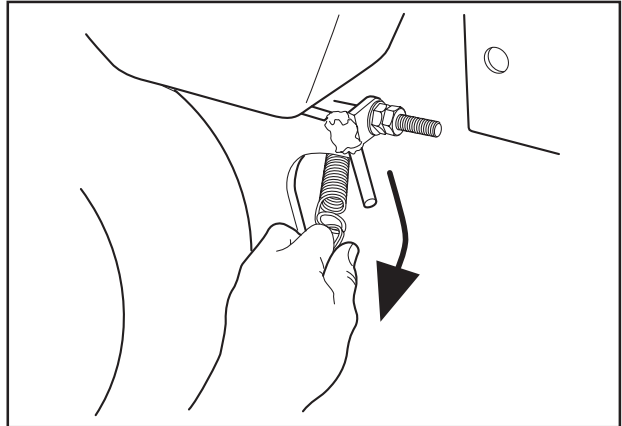


Fit the two support wheels on each side of the lower part of the deck.



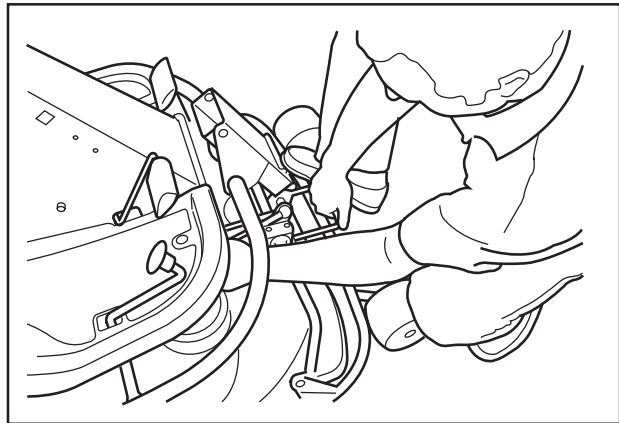
WARNING!
Wear protective glasses when removing the cutting unit. The spring which tensions up the belt can go off and cause personal injury.

3

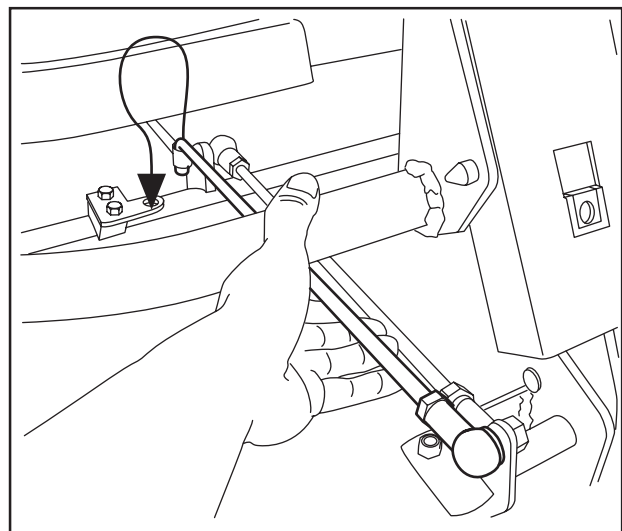


Release the spring for the drive belt's tensioning wheel. Move the cutting height lever to the lower position.

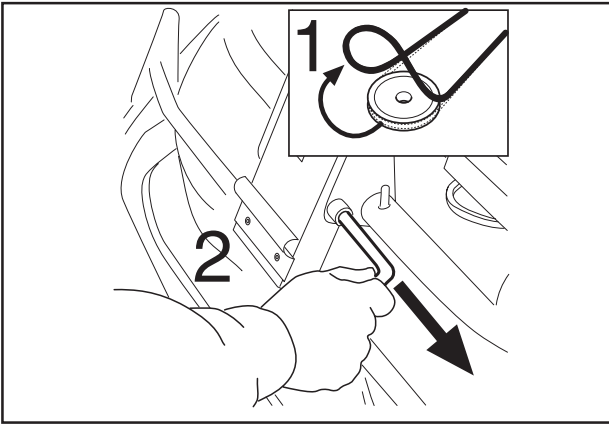
4



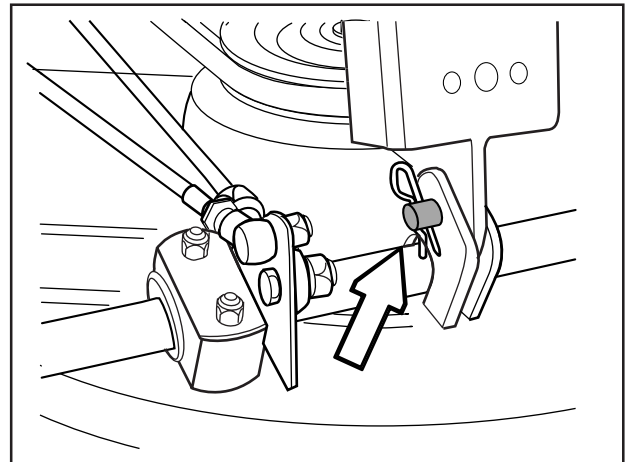
Place one foot on the front edge of the deck by the wheel, and lift the front edge of the deck to simplify releasing the height setting rod. Secure the rod in the holder.



5

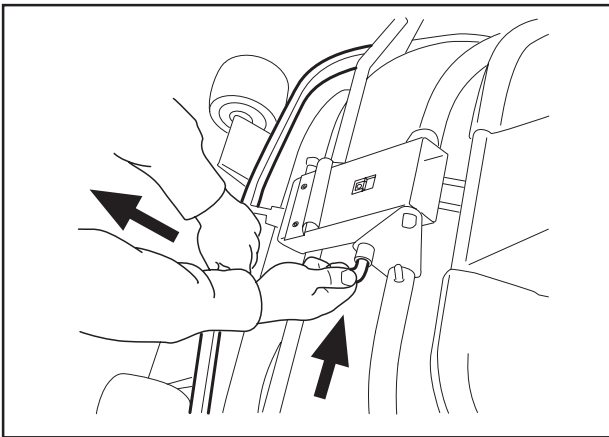


Lift off the drive belt (1). Now pull out the pin (2). Make sure not to trap your hand.



If the cylindrical bolt, which is now holding the mowing deck is removed, the mowing deck can be lifted off.

6

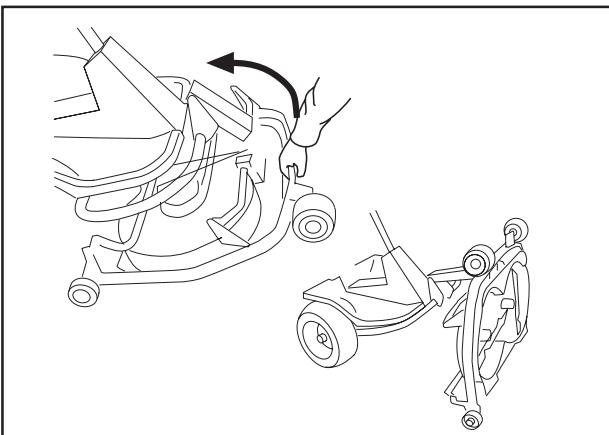


Pull the frame forwards and replace the pin.

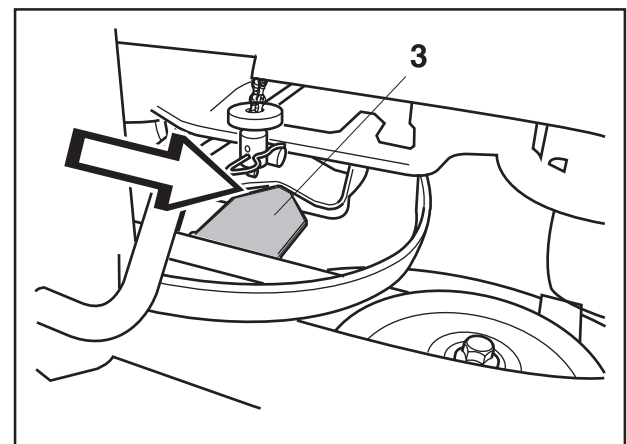
To leave the service position

To leave the service position, reverse the procedures set out in "Placing in the service position". Make sure that the "lug" (3) on the mowing deck enters the clamp correctly on the underside of the machine, see diagram.

7



Grip the front edge of the deck, and pull out and lift it up to the service position.



Dismantling the cutting unit

Rear and side ejectors

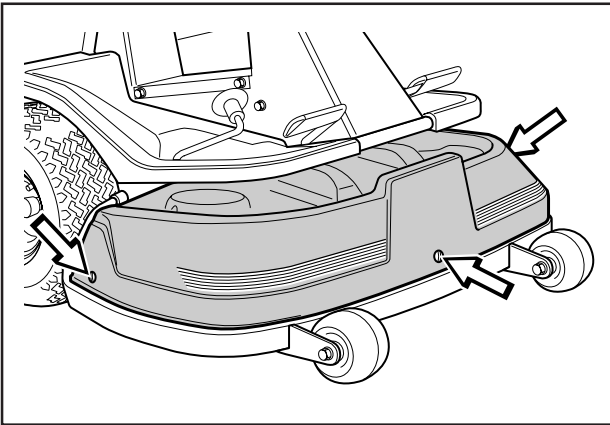
1

- Place the machine on a level surface.
- Apply the brakes by pressing down the pedal and lock using the pushbutton.



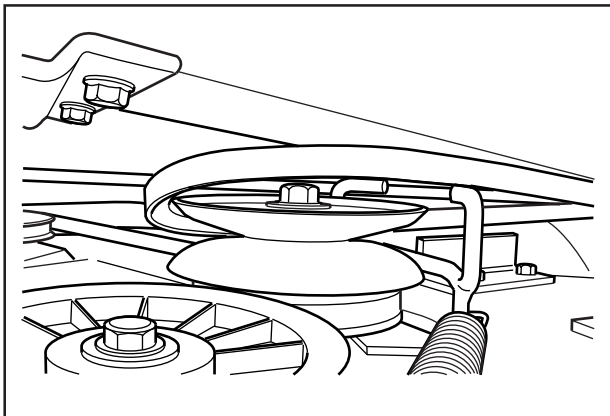
WARNING!
Wear eye protection and work gloves when working on the mowing deck.

2



Remove the front cover. Remove the right and left folding cover.

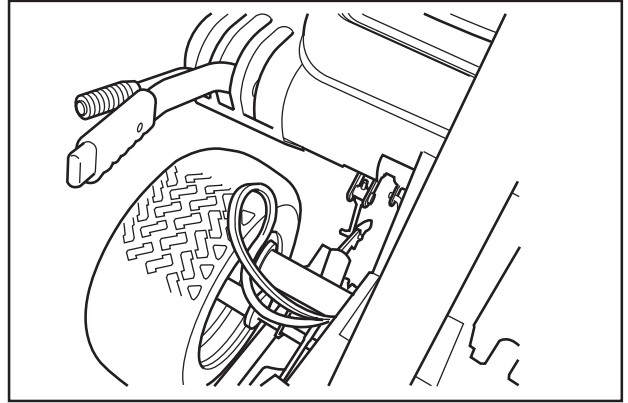
3



Raise the mowing deck to the transport position with lifting lever.

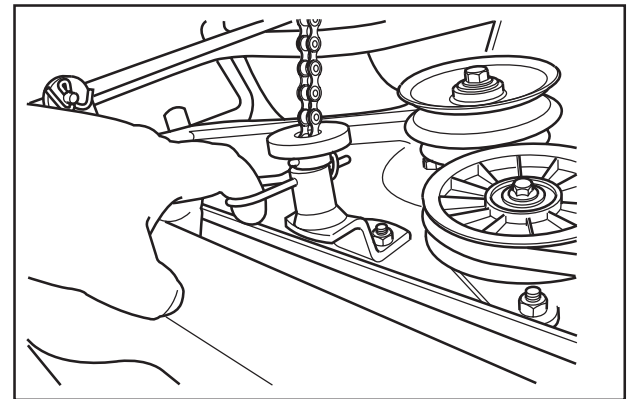
Work off the belt from the mowing deck's rear pulley.

4



Lower the mowing deck to the mowing position with the lifting lever. Set the lowest mowing height with the mowing height lever.

5

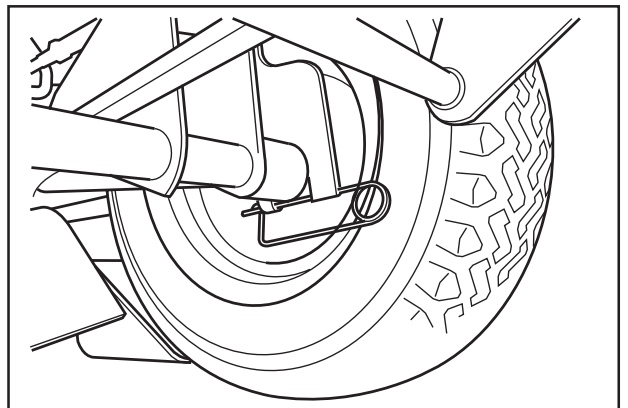


Remove the hairpin spring holding the lifting chain in the mowing deck.



WARNING!
The mowing deck will drop to the ground when the lock pins are removed. Risk for pinch injuries.

6



Remove the lock pins (safety pins) on both sides of the back of the mowing deck.

Fit the mowing deck in the reserve order.

Replacing the cutting unit's belts

Belt replacement on BioClip 103 and Combi 103

There are two versions of BioClip 103. Version 1 has one toothed belt and version 2 has two. Combi 103 is only available with a tooth belt. The toothed belts drive the blades and synchronise their rotation. The belts are located under a cover on top of the cutting unit.

1. Remove the cutting unit.
2. Remove the front bolt from the parallel strut and tip the strut backwards. Push the height adjustment strut forwards.
3. Loosen the two bolts holding the protective hood and then lift off the hood.

Useful hint: Mark the positions of the blades on the respective pulley using a felt-tip pen.

4. Version 1 and Combi 103:

Loosen the three bolts 1/2 - 1 turn. Press the sides of the belt together to give maximum slack and tighten one of the bolts. Replace the belt and tighten as shown (see decal on cover). Set the blades at 90° to each other and loosen the bolt again. The spring ensures the correct belt tension. Check the positions of the blades again and adjust if necessary by repositioning the belt on the teeth. Tighten the three bolts to 45 Nm/32 lbf.

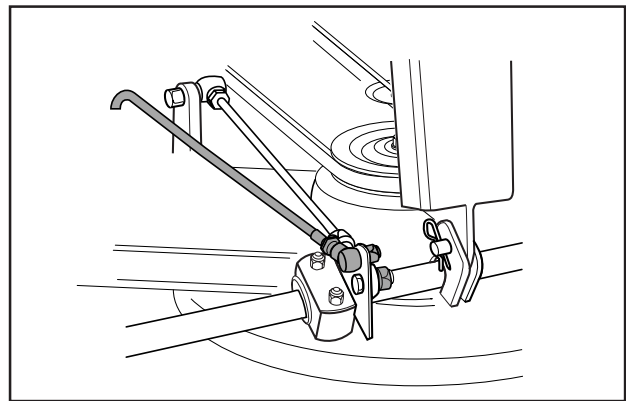
4. Version 2:

Loosen the nuts on the eccentric plate and turn this away.

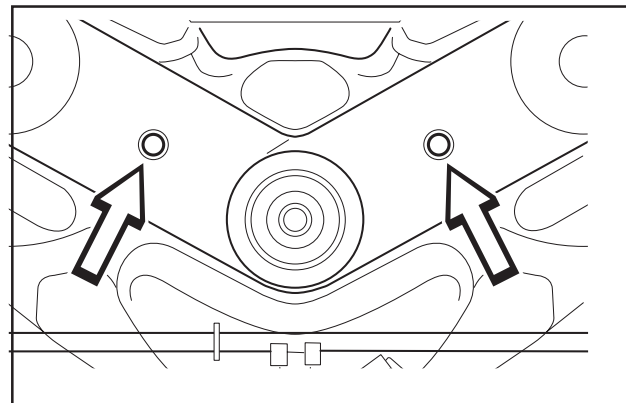
Loosen the four nuts (see diagram) holding the outer blade bearing enough so that the bearing can be moved.

Slide the blade bearing in towards the centre bearing and pry off the upper belt.

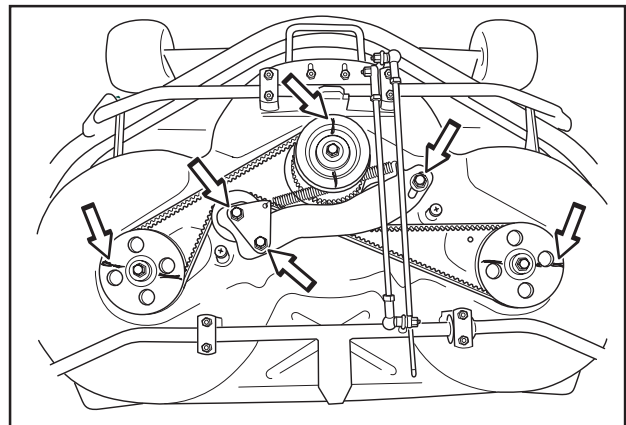
Repeat the procedure for the lower belt.



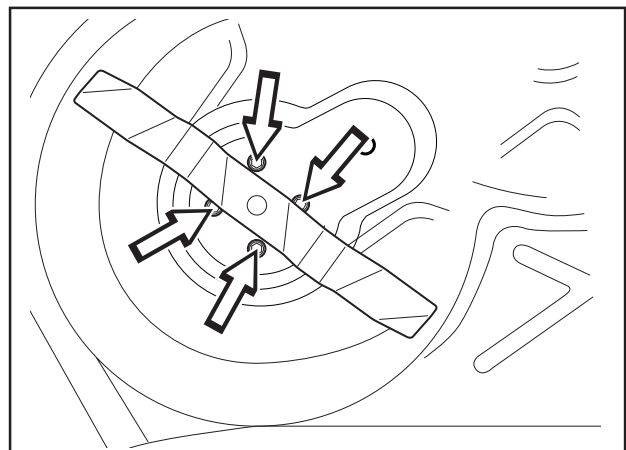
BioClip 103 Versions 1 and 2, Combi 103



BioClip 103 Versions 1 and 2, Combi 103



BioClip 103 Version 1, Combi 103



BioClip 103 Version 2



WARNING!
Protect your hands by wearing gloves when working with the blades.

5. Version 2:

Assembly: First fit the lower belt and then the upper belt.

Ensure the blades are positioned as set out in the diagram, at 90 degrees to each other, otherwise the belts must be adjusted. When the blade bearings are loose the belts can be moved around to the next tooth.

Tighten the nuts enough so that the bearings rest against the cutting hood but still can be moved.

Tension the belt by turning the eccentric adjuster on top of the cutting hood. Tighten the nut.

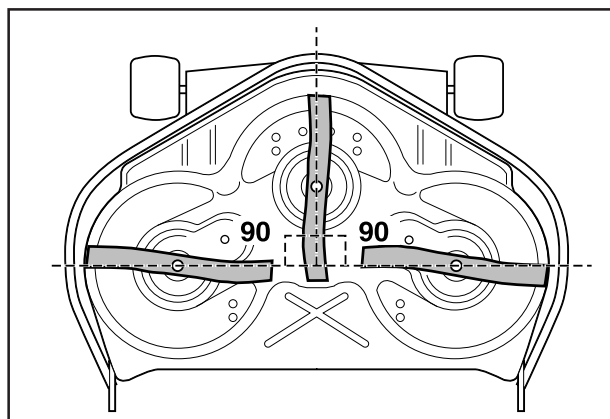
Tighten all nuts on the blade bearings.

6. Version 2:

When the belt moves (d) = 7 mm/1/4" inwards with a force of (p) = 10 N/2 lb, the belt tension is correct.

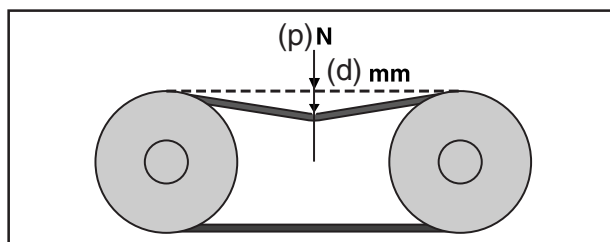
7. Version 1 and 2 as well as Combi 103:

Fit the protective cover over the belts and replace the parallelism arm.



IMPORTANT INFORMATION

On a BioClip 90 and all 103 units the blades should have a relative position 90° between blades. In all other cases the blades can collide and cause serious damage to the cutting unit.



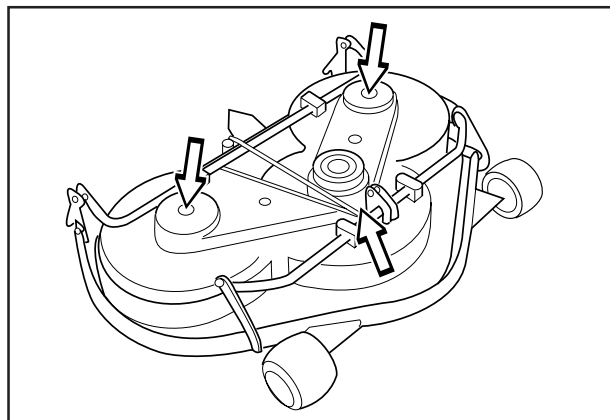
Belt replacement on BioClip 90

The BioClip 90 is driven by a toothed belt that synchronises rotation of the blades. The belt is located under the cover of the cutting unit.

When changing the belt on BioClip 90, follow the above description, items 1-7 for version 2.

NOTE!

BioClip 90 only has 1 belt, tension (d) = 8 mm/5/16", (p) = 7 N/1,5 lb.

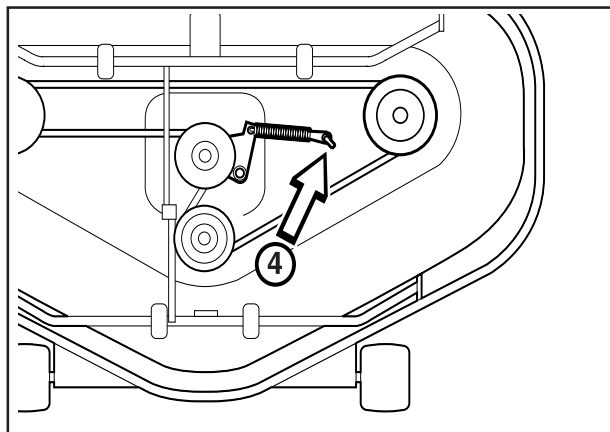


Belt replacement on the mowing deck with side or rear ejection, BioClip 112 and Combi 112

The blades on mowing decks with "collision-proof" blades are driven by a V-belt. Proceed as follows to replace the V-belt:

1. Remove the cutting unit, see page 31.
2. Undo the bolt on the lift strut and the two screws on the cover. Lift the cover off the cutting unit.
3. Loosen the spring (4) that tensions the V-belt and pry off the belt.

The new belt is fitted in the reverse order.

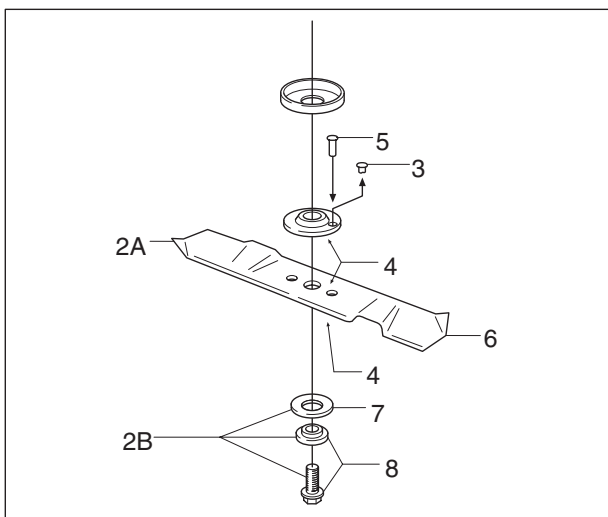


Replacing the break-pin (BioClip 90, 103 and Combi 103)

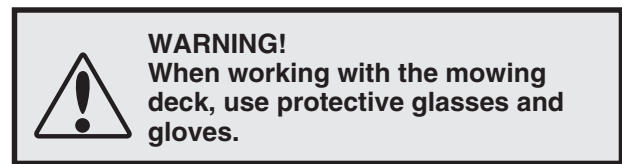
The blades are fitted with a shear pin to protect the mowing deck and its drive when colliding with obstacles. A domed, spring friction washer is fitted to each blade bolt. The washer must always be replaced with a new washer when replacing the shear pin. Otherwise the break-pin can break causing the blades to collide.

Only use original spare parts. A set containing a blade, break-pin and friction washer can be purchased from your dealer.

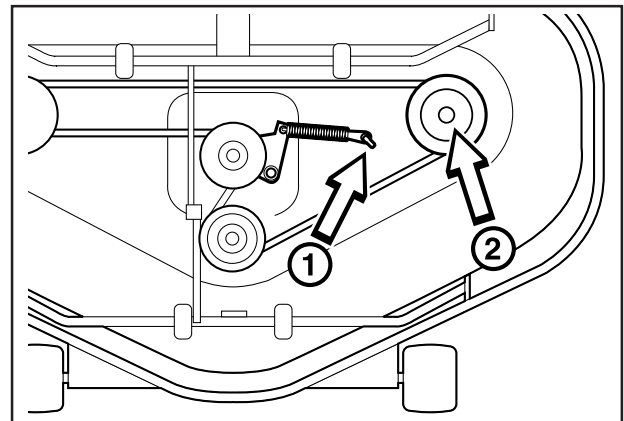
1. Put the unit in the service position, see "Placing in the service position".
2. Remove the blade (2A) by removing the blade bolt with washer and friction washer (2B).
3. Remove the remains of the broken break-pin (3).
4. Make sure the contact surfaces (4) on the blade and the blade mounting are free from metal. Clean if necessary.
5. Fit **one** new break-pin (5) in the blade mounting.
6. Fit the blade (6), make sure it is fitted as illustrated.
7. Fit a **new** friction washer (7) with the concave face turned towards the blade.
8. Fit the blade bolt with washer (8). Tightening torque 45-50 Nm (4,5-5 kpm/32-36 lbft)



Removal of blades with bearings

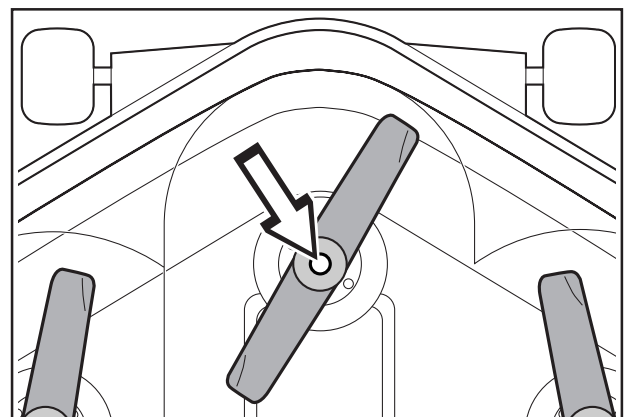


1



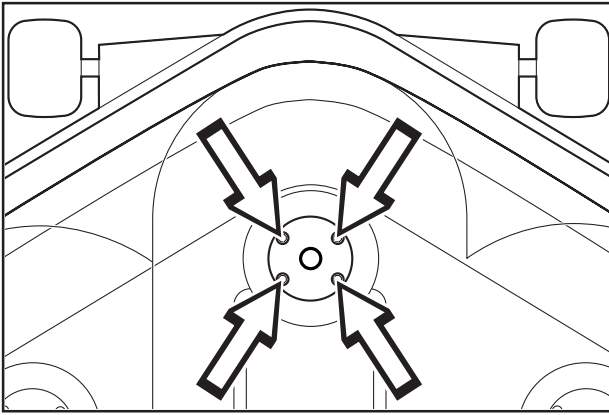
- Release the spring which tensions the V-belt and twist off the belt.
- Unscrew the screw which holds the pulley (2) and detach the pulley, a puller may be needed for this. Do not lose the key which is found between the pulley and the axle.

2



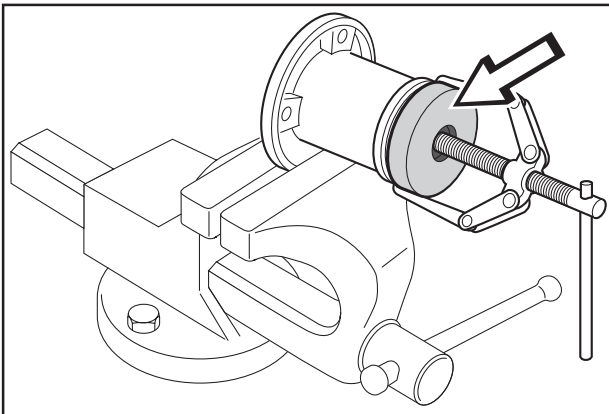
Unscrew the screw which holds the blade and remove the screw, washer and blade.

3



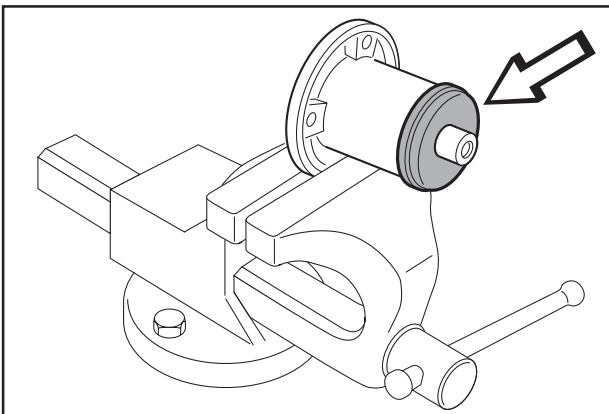
Unscrew the four screws which hold the blade bearing and remove the entire bearing packet from the mowing deck.

4



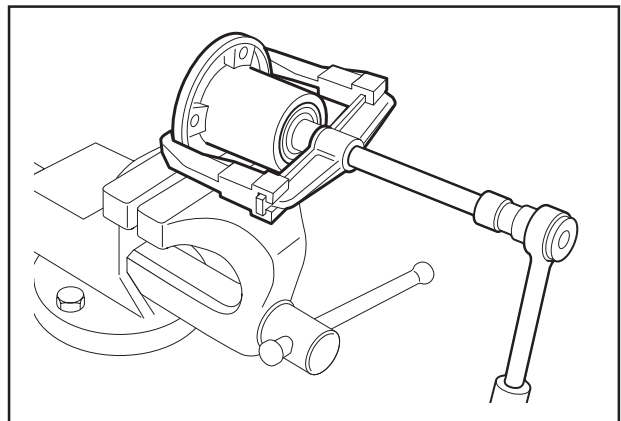
Remove the hub using a puller. Do not lose the key which is found between the pulley and the axle.

5



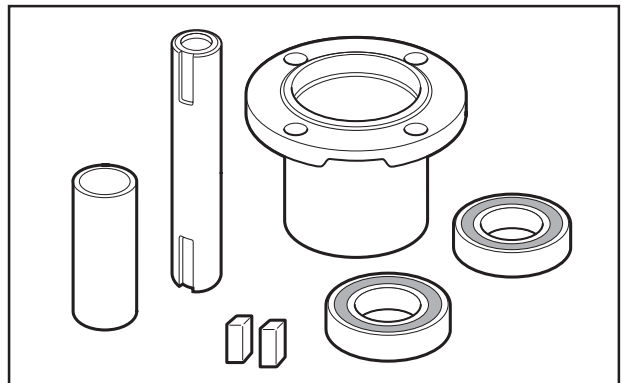
Remove the sheet metal safety washer.

6



- Press out the axle with a puller.
- Knock out the bearings and remove the spacer.

7



The entire packet can be bought as a complete set with axle housing, axle, spacer and bearing.

Installation is carried out in the reverse removing order.

IMPORTANT INFORMATION

When tightening the screws for the blade shafts the screws on the transmission side should always be tightened first, followed by the blade screws.

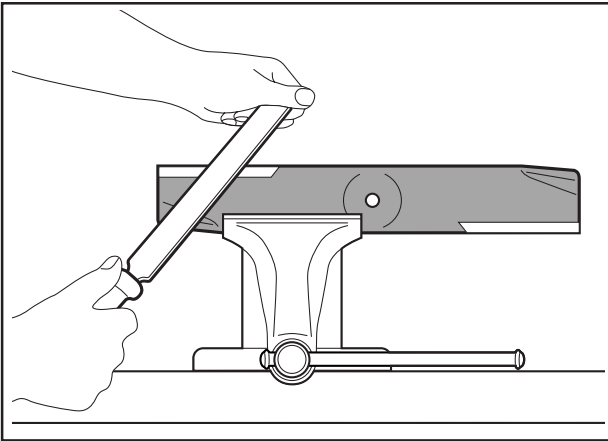
The friction washer must be replaced when replacing the shear pin.

Ensure that the axle is fixed in the same direction as it was removed, if not the keys will not fit into the key-way.

Tighten the blade bearings to a torque of 20–25 Nm/14-18 lbft.

Grinding and balancing of blades

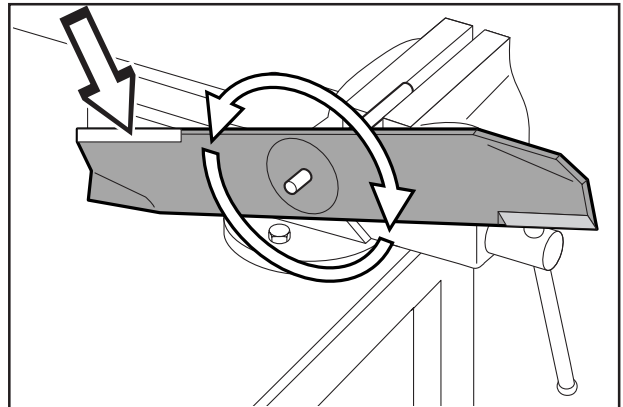
1



WARNING!
When working with the blades,
use protective gloves.

- Remove the blades according to the description in the previous section.
- Clamp the blade in a screw vice and file it so that it becomes sharp.

2



Balance the blade as follows:

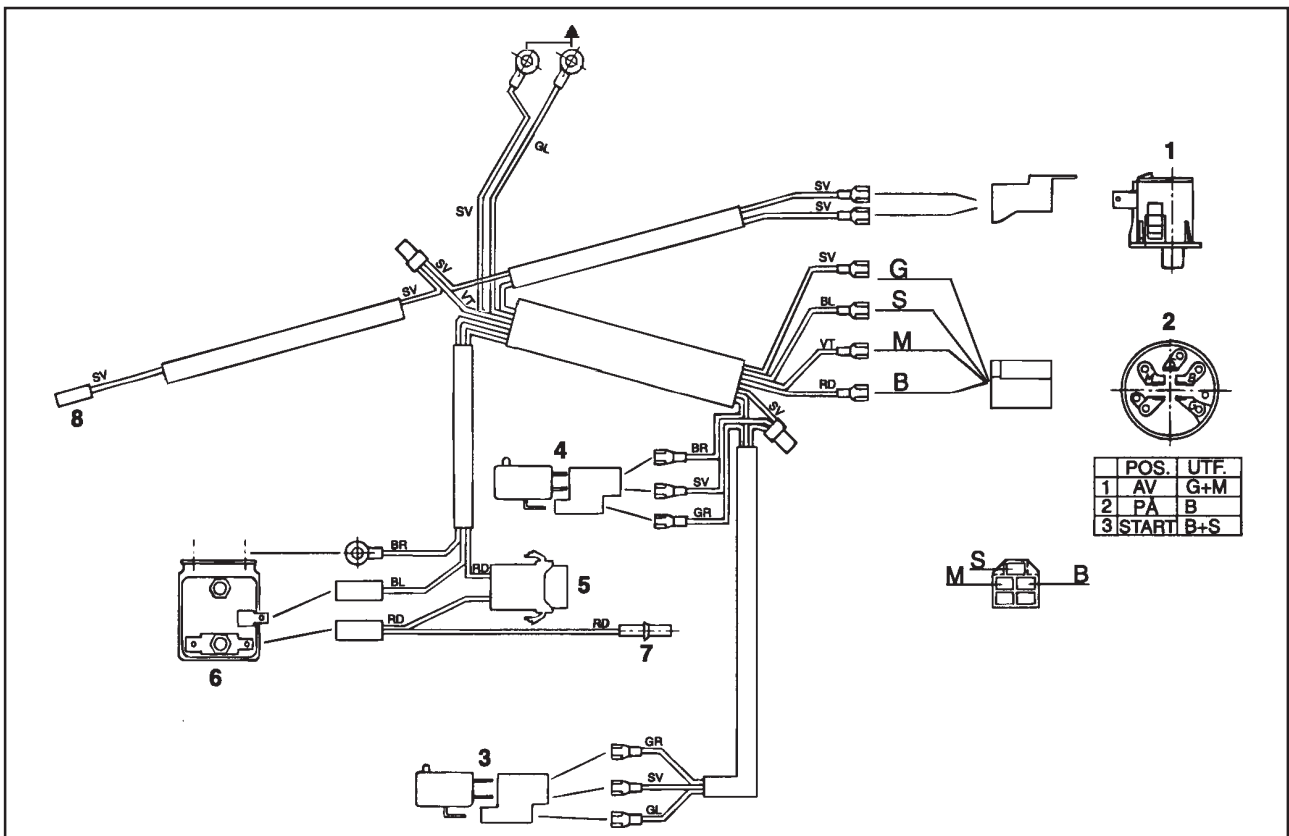
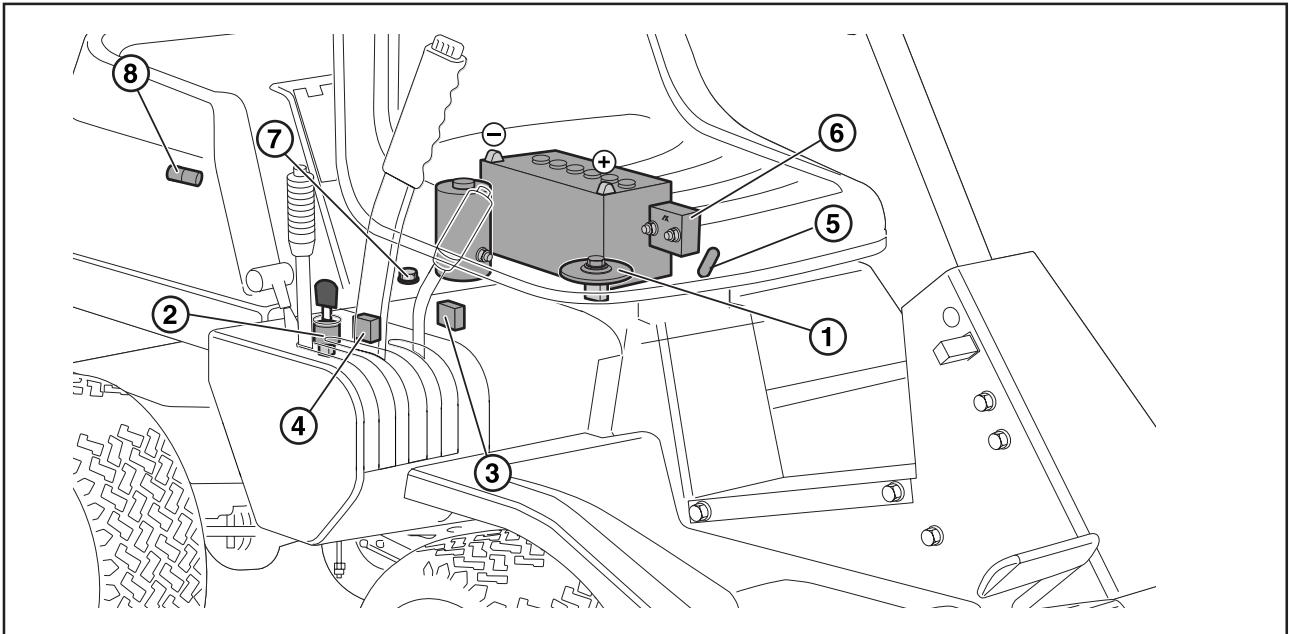
- Fix, for example, a mandrel horizontally in a screw vice according to the diagram.
- Push the blade onto the mandrel via the hole in the centre of the blade and check that the blade balances evenly. The diagram shows a blade which needs to be adjusted, it must be ground further to obtain the correct balance (at the arrow).
- Installation is carried out in the reverse removing order.

IMPORTANT INFORMATION

The friction washer must be replaced when replacing the shear pin.

Electrical system

Circuit diagram Rider 11

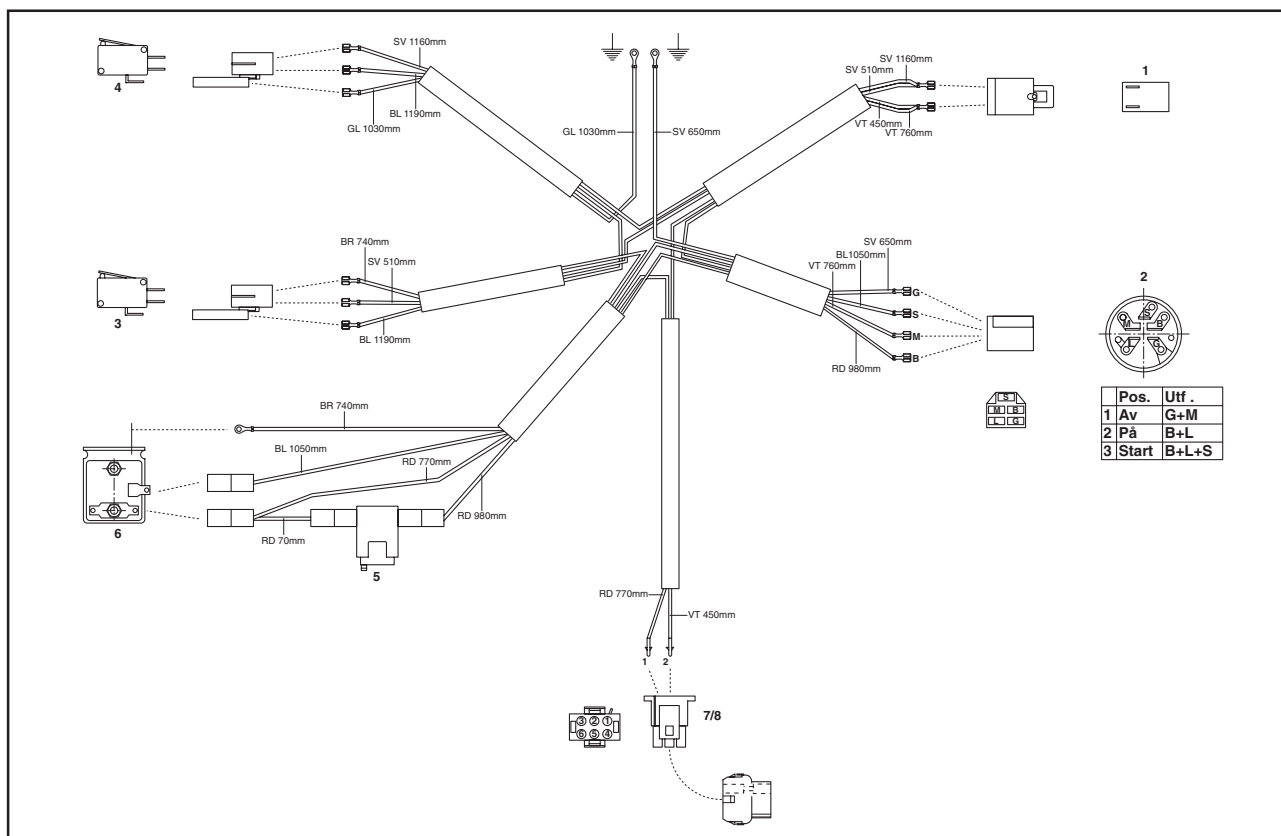
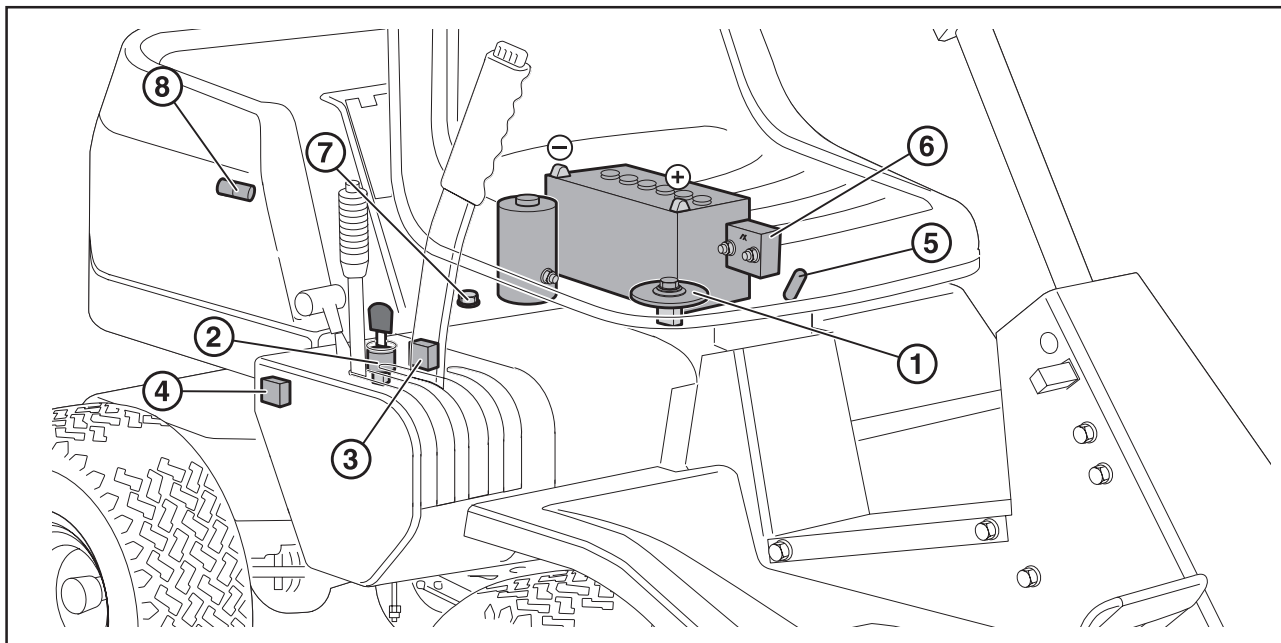


1. Microswitch, seat
2. Ignition lock
3. Microswitch, lifting lever
4. Microswitch, gear position
5. Fuse 15A
6. Starter relay
7. Engine/charging
8. Engine/stop

Key to colour abbreviations in the electrical system

SV = Black
 RD = Red
 BR = Brown
 BL = Blue
 VT = White
 GR = Green
 GL = Yellow

Circuit diagram Rider 13 and Rider 13 Bio

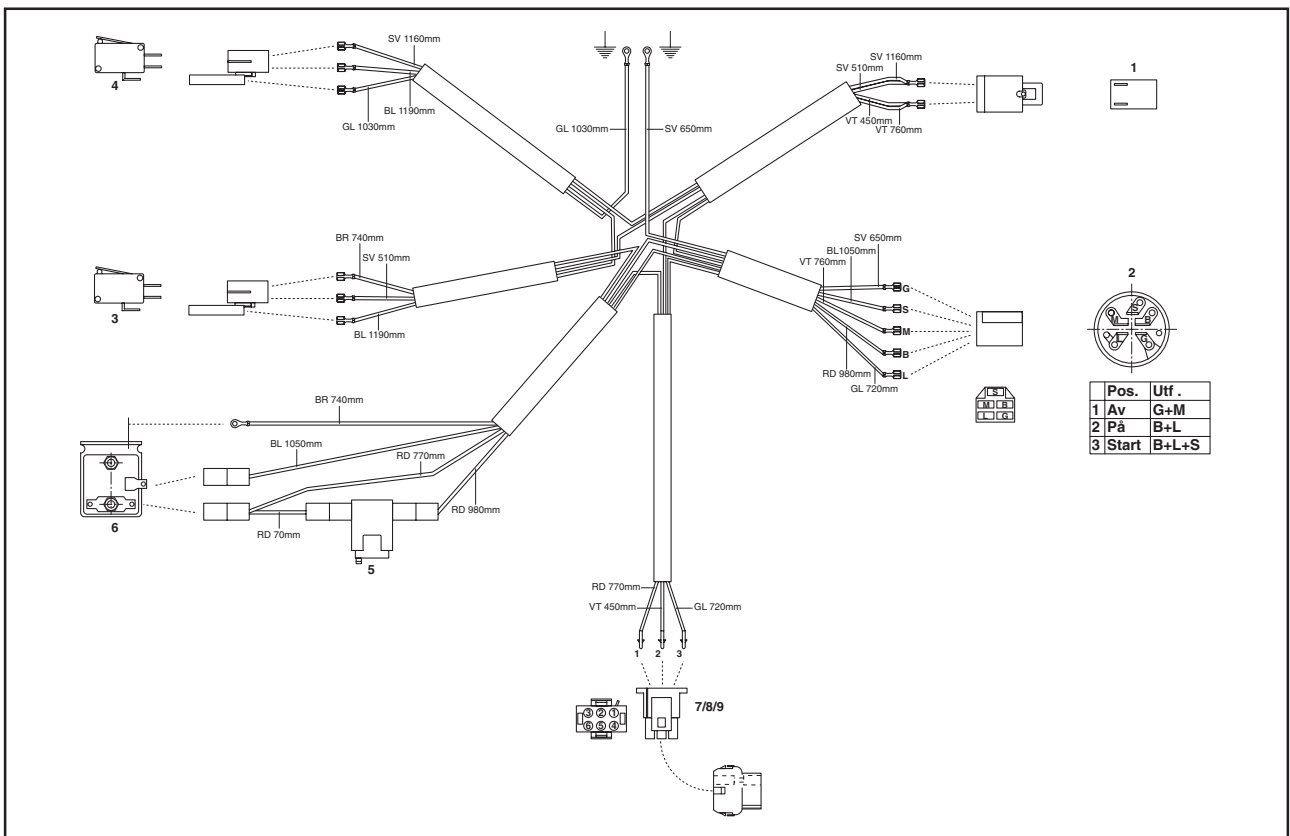
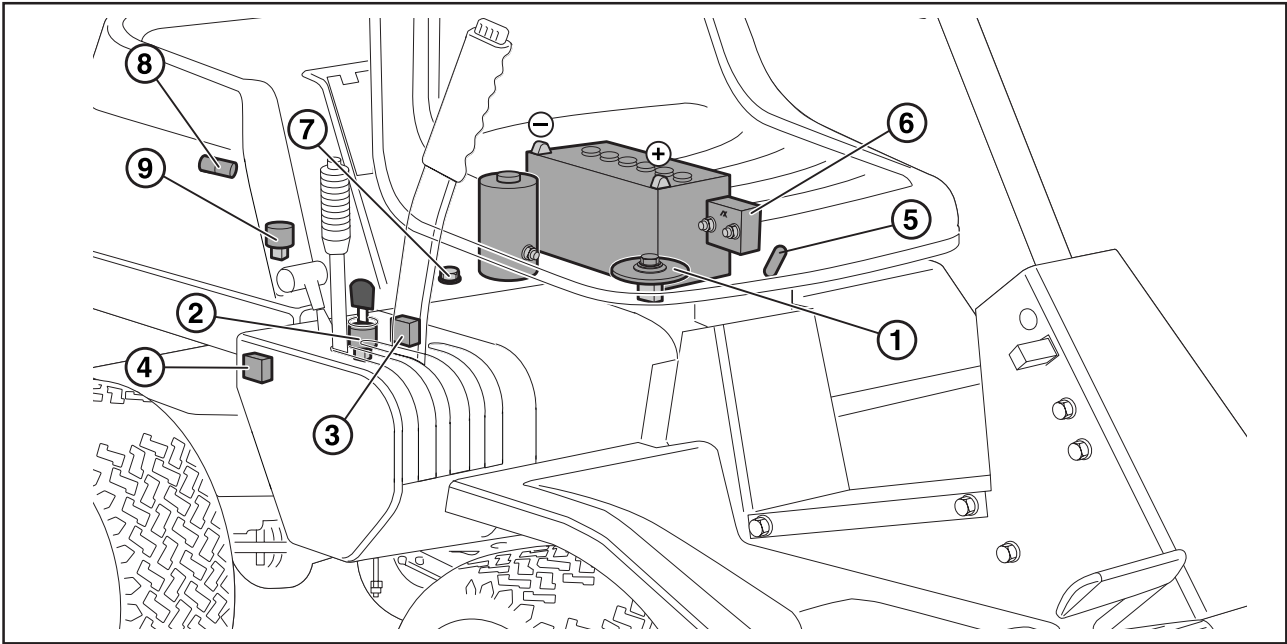


1. Microswitch, seat
2. Ignition lock
3. Microswitch, lifting lever
4. Microswitch, gear position
5. Fuse 15A
6. Starter relay
7. Engine/charging
8. Engine/stop

Key to colour abbreviations in the electrical system

- SV = Black
- RD = Red
- BR = Brown
- BL = Blue
- VT = White
- GL = Yellow

Circuit diagram Rider 16



- 1. Microswitch, seat
- 2. Ignition lock
- 3. Microswitch, lifting lever
- 4. Microswitch, gear position
- 5. Fuse 15A
- 6. Starter relay
- 7. Engine/charging
- 8. Engine/stop
- 9. Engine/fuel valve

Key to colour abbreviations in the electrical system

- SV = Black
- RD = Red
- BR = Brown
- BL = Blue
- VT = White
- GL = Yellow

Inspecting the safety system

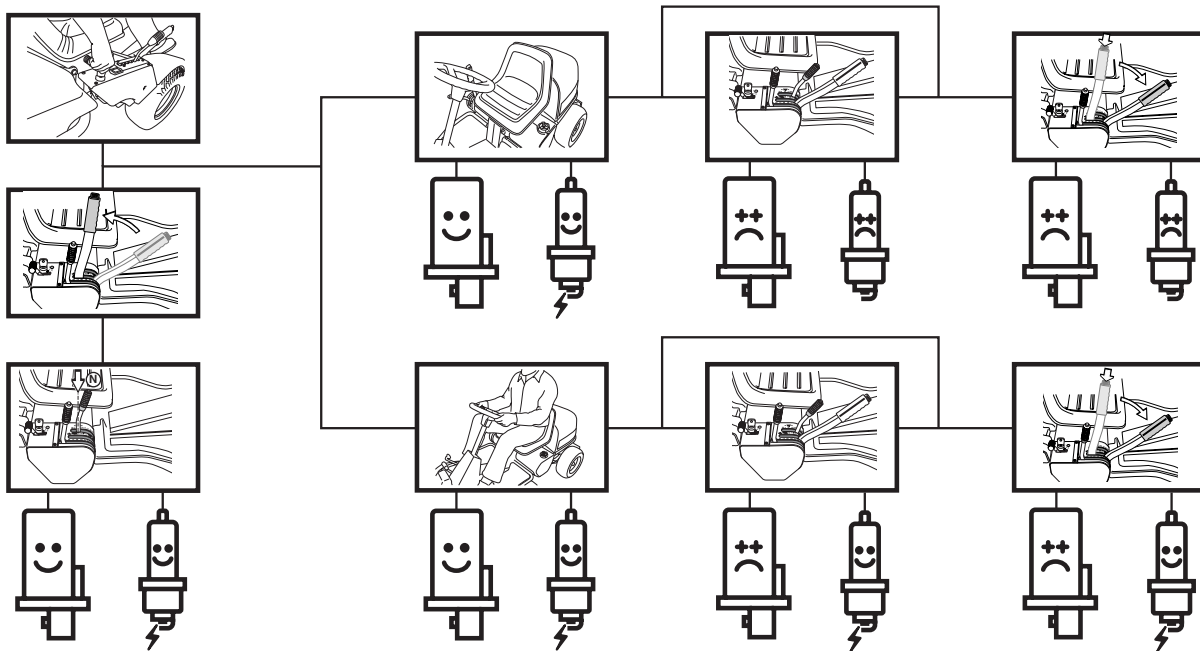
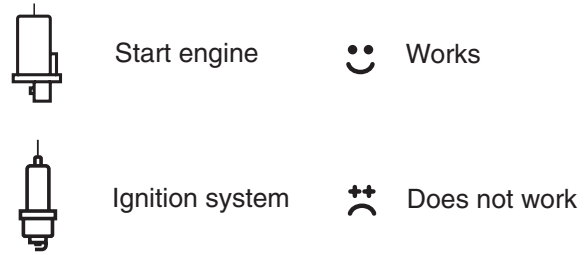
The Rider is equipped with a safety system that prevents starting or driving under the following conditions:

The engine should only be possible to start when the cutting unit is in its raised position and the hydrostat pedals are in the neutral position.

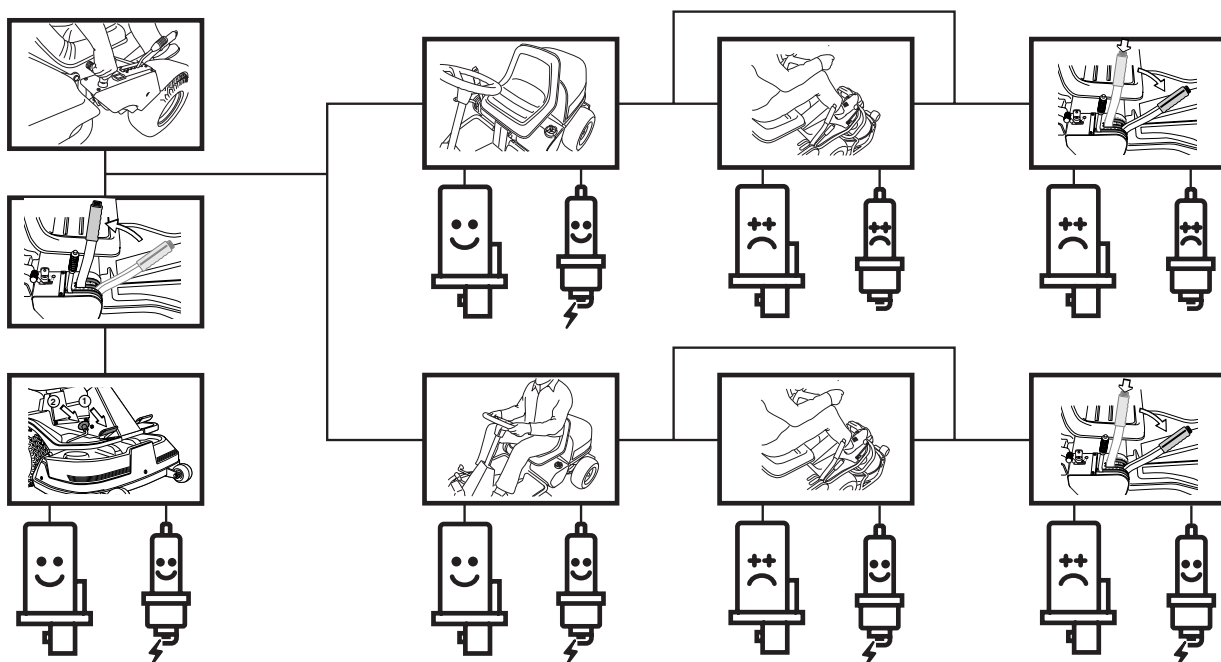
The driver does not need to be seated in the driver's seat.

Make daily inspections to ensure that the safety system works by attempting to start the engine when one of the conditions is not met. Change the conditions and try again.

Check that the engine stops if you temporarily move out off the driver's seat while the cutting unit is lowered or the hydrostat pedals are not in the neutral position.

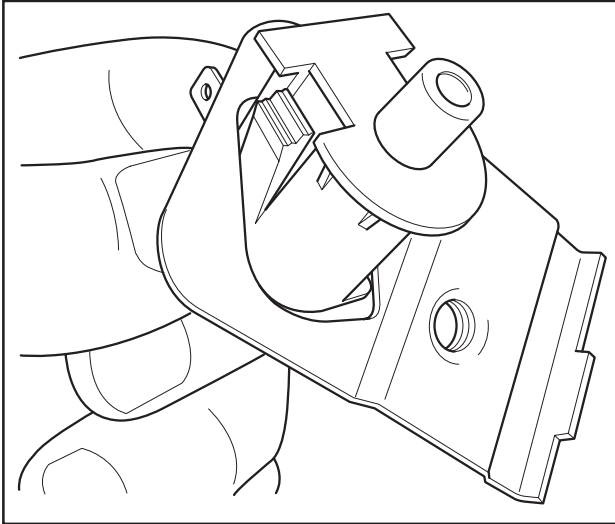


Rider 11



Rider 13, Rider 16

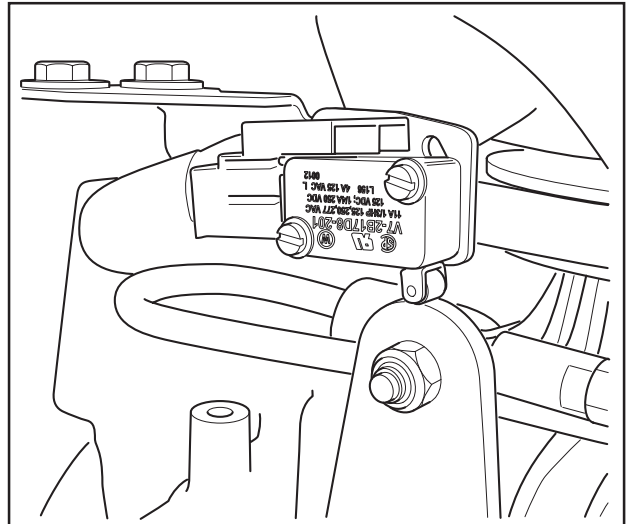
Microswitch: Seat



1. Fold up the seat and remove the spring disc with spring and spacer sleeve. The microswitch holder is released.
2. Disconnect the cable connections from the microswitch.
3. Press in the fasteners and remove the microswitch from the holder.

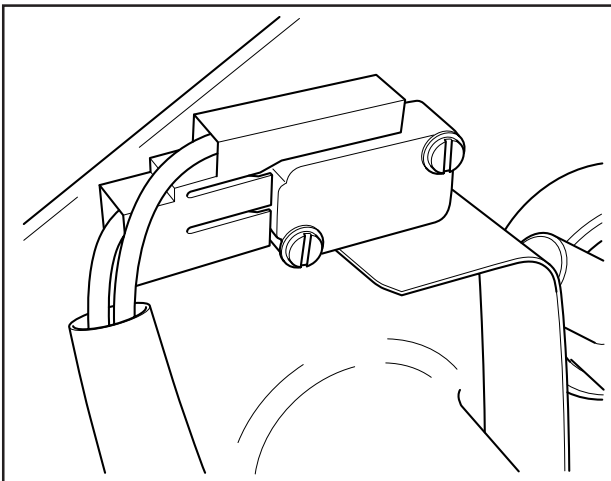
Assembling is done in the reverse order without setting.

Microswitch: Neutral Position



1. Remove the transmission cover.
2. Check the hydrostatic cable adjustment.
3. Adjust the microswitch so that it is activated by the highest point in the hydrostatic arm's path when no driving pedal is pressed.
4. Adjust the microswitch so that it is definitely activated by the hydrostatic arm, but allows extra motion (it must not bottom out). Tip: Hold a feeler gauge between the switch and the arm when making the adjustment.
5. Replace the transmission cover.

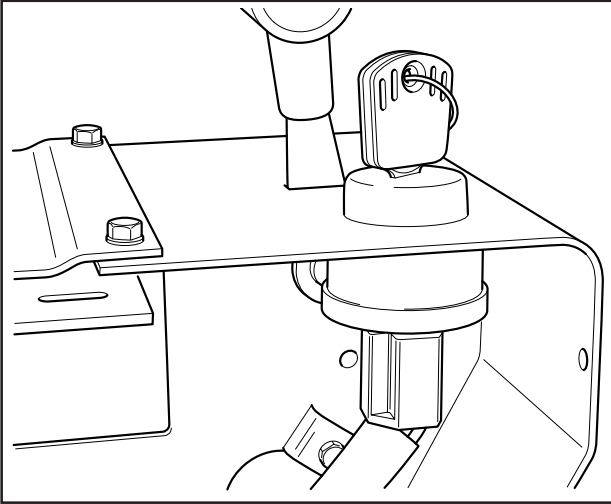
Microswitch: Mowing Deck



1. Loosen the right-hand wing cover.
2. Remove the inner protecting plate on the gear lever carrier.
3. Release the connector from the microswitch.
4. Remove the microswitch.

Assembling is done in the reverse order without setting.

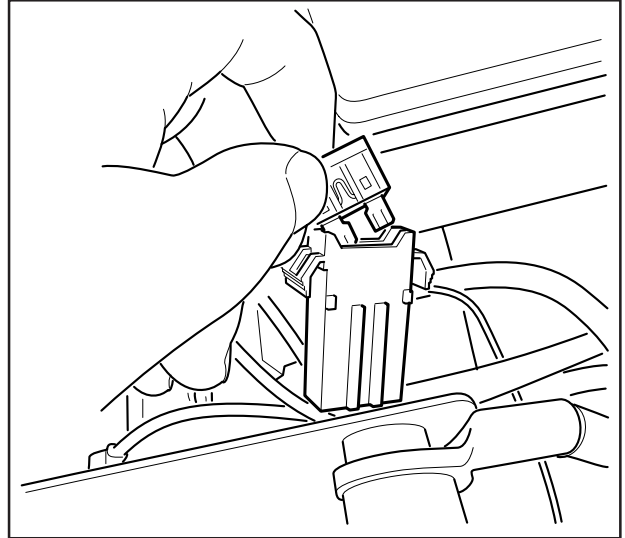
Ignition and Starter Lock



1. Loosen the right-hand wing cover.
2. Remove the inner protecting plate on the gear lever carrier.
3. Release the contact box from the ignition lock by pulling it straight down.
4. Remove the ignition key and the rubber seal.
5. Remove the nut and the ignition lock.

Assemble the parts in the reverse order. Make sure the connector ends up in the proper position (click-lock).

Main fuse



The fuse is placed in a detachable holder under the battery case's cover, in front of the battery.

Type: Flat pin, 15 A.

Do not use any other type of fuse when replacing.

A blown fuse is indicated by a burnt connector.

Pull the fuse from the holder when replacing.

The fuse is there to protect the electrical system.

If it blows again shortly after replacement, it is due to a short circuit, which must be fixed before the machine can be put into operation again.

ENGINE WILL NOT START

Starter motor does not turn the engine

Discharged battery

Charge battery

Bad contact on battery poles

Clean and lubricate with copper paste

Change battery

Blown fuse

Change the fuse
Localise fault

No contact on starter relay

No current to relay

Defective ignition switch

Check cable connections or replace the switch

Starter motor and/or cable connection defective

Relay defective
Change relay

Microswitch on the cutting equipment's lifting lever defective or in wrong position

Check cable connections or replace the switch
Adjust the setting

Heavily burnt electrodes

Adjust electrode gap or replace spark plug

Defective microswitch under seat

Check cable connections or replace the switch

Bad ignition cable connection

Change the spark plug cap

Microswitches by gear lever, hydraulic pedal defective or in wrong position (neutral pos)

Check cable connections or replace the switch
Adjust the setting

Spark plug short circuited

Replace the spark plug

Defective ignition coil

Change the ignition coil

Fuel tank empty

Fill with fuel

Fuel stop valve does not open

No current to the valve or the solenoid is defective

Check cable connections or replace the valve

No fuel to the carburettor

Channel from the fuel stop valve blocked

Clean the channel with compressed air

Incorrect fuel supply

Fuel filter blocked

Change the filter.

Tank ventilator blocked

Clean or replace the fuel cap

Fuel pump defective

Broken pump diaphragm

Change the diaphragm

No fuel from the carburettor (Spark plug dry)

Fuel pipes blocked or pinched

Clean or replace the pipes

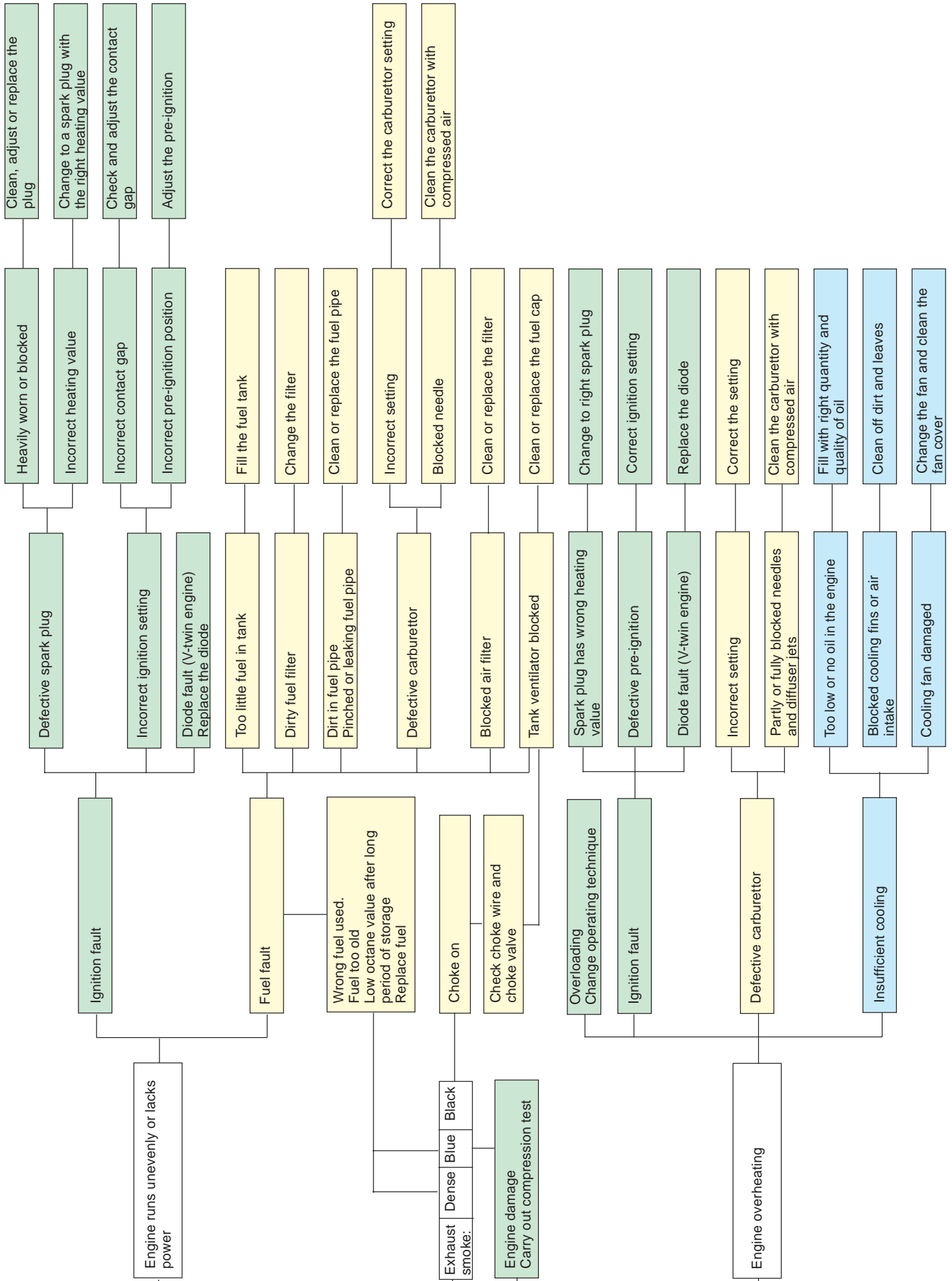
Needles and diffuser jets blocked

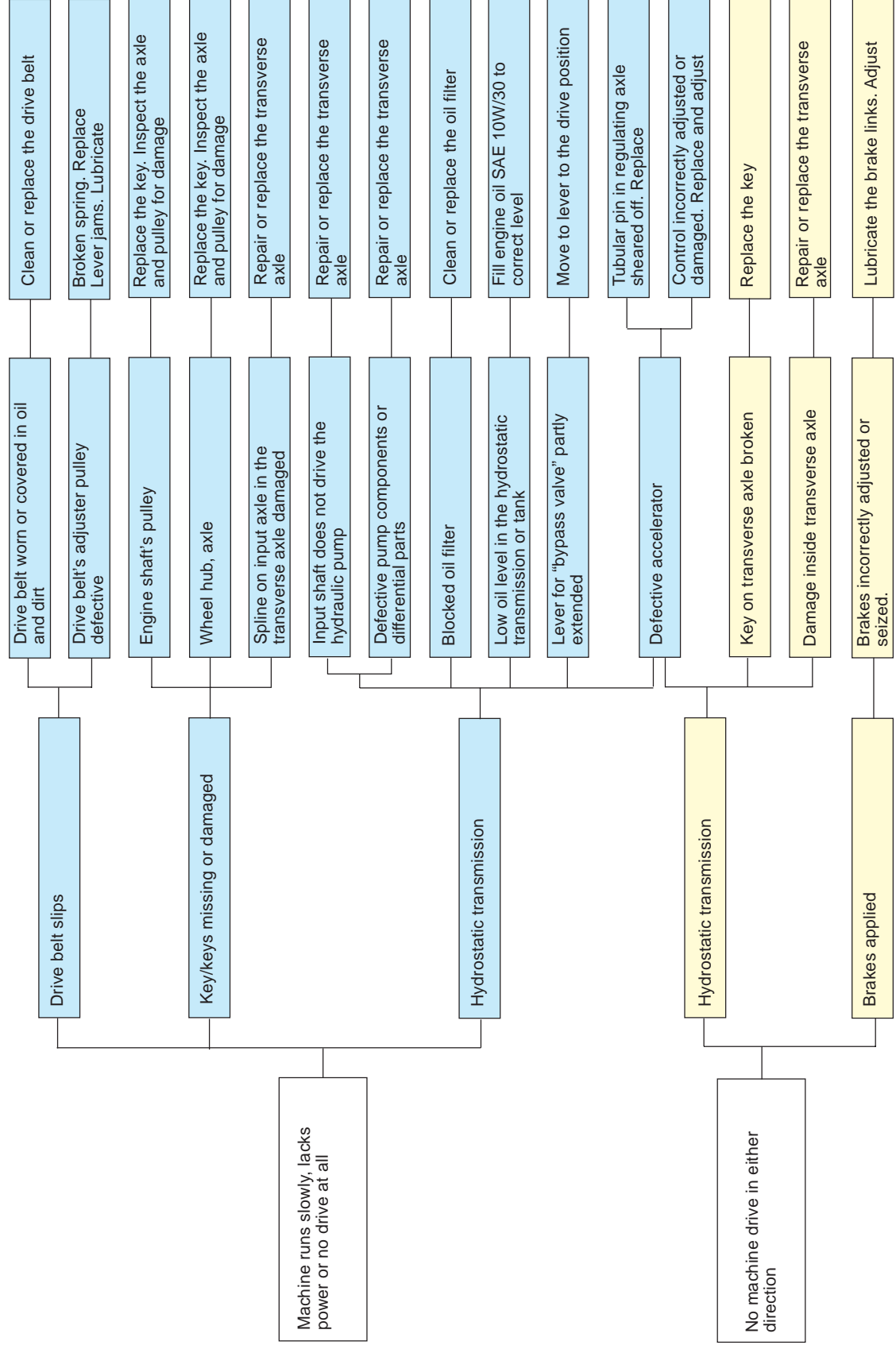
Clean the carburettor with compressed air

Impulse channel blocked

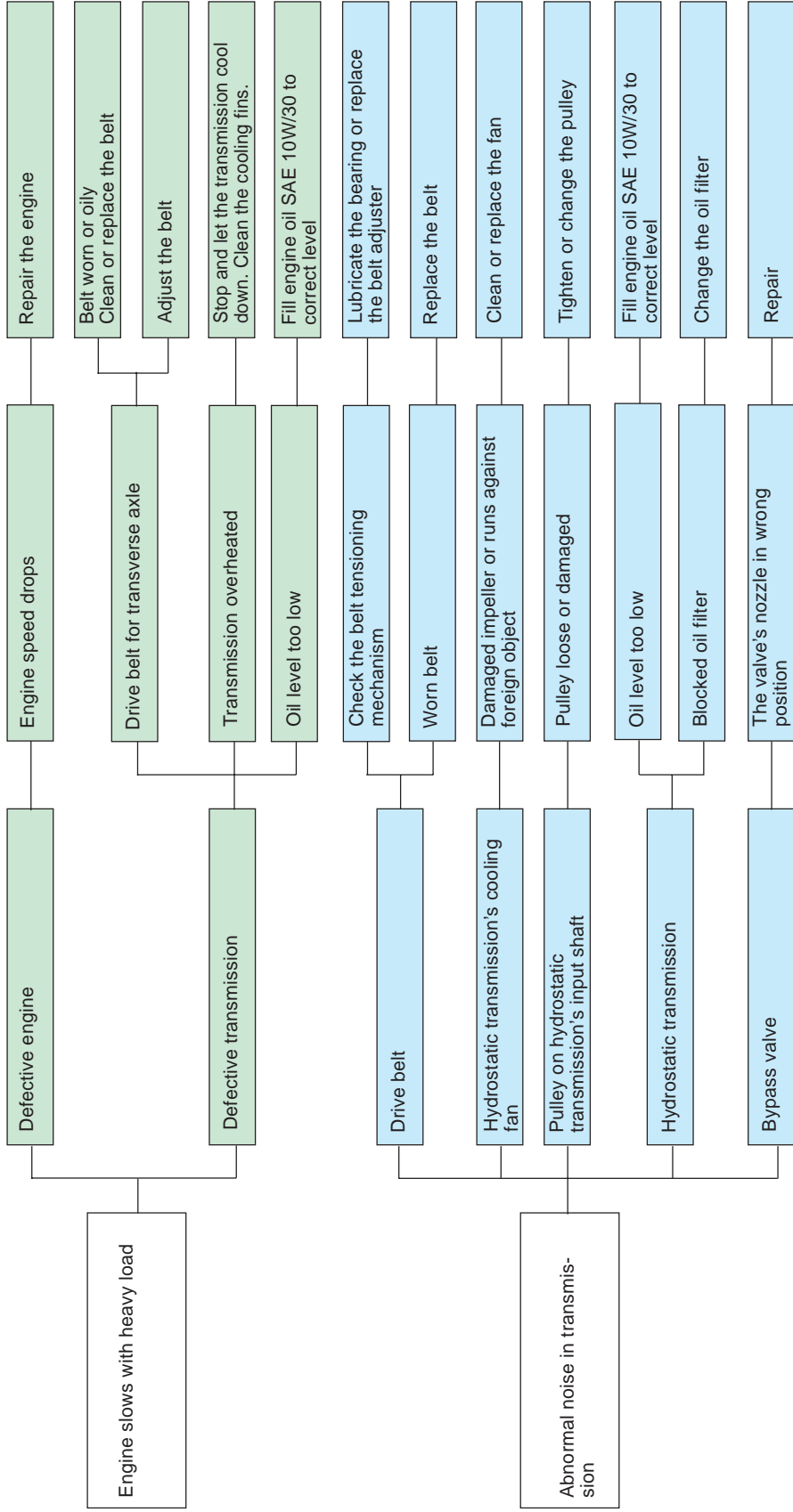
Clean the channel with compressed air

ENGINE STARTS BUT DOES NOT RUN SATISFACTORILY

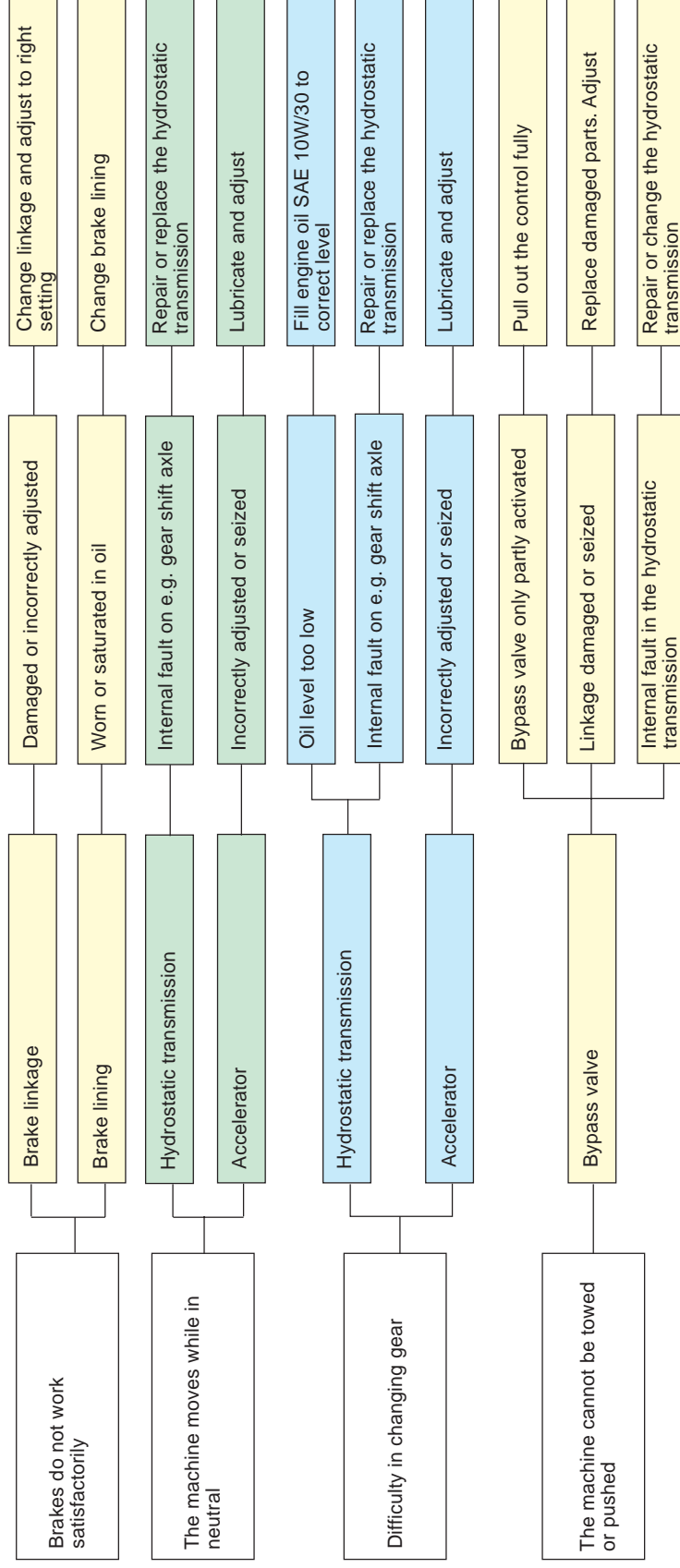




The hydrostatic transmission must not be opened during the warranty period.



The hydrostatic transmission must not be opened during the warranty period.



The hydrostatic transmission must not be opened during the warranty period.



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We hope you find the links below useful. For further gardening information visit
www.GardenResources.co.uk

Blower Vacs	Brush cutters	Brushcutters	Chainsaws	Chain saws
Cultivators	Cylinder lawn mowers	Cylinder mowers	Echo chainsaws	Echo Strimmers
Electric chainsaws	Fertiliser spreaders	Garden blowers	Garden rollers	Garden shredders
Garden tractors	Garden vacuums	Hayter lawn mowers	Hedge cutters	Hedgecutters
Hover mowers	Husqvarna chainsaws	Kawasaki brush cutters	Kawasaki trimmers	Lawn mowers
Lawn scarifiers	Lawn tractors	Leaf blowers	Leaf vacuums	Petrol chainsaws
Petrol hedge cutters	Ride on lawn mowers	Ride on mowers	Rotary mowers	Rotavators
Ryobi trimmers	Scarifiers	Strimmers	Westwood lawn tractors	Westwood ride on mowers
Westwood tractors	Brush Cutters	Brushcutters	Blower Vacs	Chain Saws
Chainsaws	Cultivators	Cylinder Lawn Mowers	Echo Chainsaws	Echo Strimmers
Electric Chainsaws	Fertiliser Spreaders	Garden Blowers	Garden Rollers	Lawn Rollers
Garden Shredders	Garden Tractors	Garden Vacuums	Hayter Lawn Mowers	Hedge Cutters
Hedgecutters	Hover Mowers	Husqvarna Chainsaws	Kawasaki Brush Cutters	Kawasaki Strimmers
Lawn Mowers	Scarifiers	Lawn Tractors	Leaf Blowers	Leaf Vacuums
Petrol Chainsaws	Petrol Hedge Cutters	Ride on Lawn Mowers	Ride on Mowers	Rotary Mowers
Rotovators	Ryobi Strimmers	Garden Patio Heaters	Outdoor Patio Heaters	Gas Patio Heaters
Patio Heaters	Patio Heater Covers	Garden Heaters	Greenhouse Heaters	Green House Heaters
Gas Greenhouse Heaters	Stainless Steel Patio Heaters	Table Top Patio Heaters	Patio Heaters UK	Patio Heaters with Covers
Christmas Gardening Gifts	Garden Tractors	Ride on Lawn Mowers	Ride on Mowers	

Also See

[Gardening Tools Direct](#), for lawn mowers, brush cutters, chainsaws
[Gardening Supply](#) for patio heaters, lawn mowers, chainsaws
[Garden Tractor](#), for lawn tractors and ride on mowers